THE IRON TRADE REVIEW

VOL. XXXI. CLEVELAND, O. OCTOBER 6, 1898. CHICAGO, ILL. NUMBER 40

The only reasons that higher prices are being constantly paid by the most prominent steam users in the United States for Cahall Boilers are—that they are better made, last longer, cost less for maintenance, show a higher efficiency and make drier steam than any other kind.

Send for illustrated catalogue.

Cahall Sales Department, Pittsburg, Pa.

THE HARRINGTON & KING PERFORATING CO. CHICAGO.

METALS PERFORATED AS REQUIRED FOR — SCREENS OF ALL KINDS.

Main Office and Works: 226 N. Union St., Chicago.

BRISTOL'S RECORDING INSTRUMENTS

For Pressure, Temperature and Electricity.

All ranges, Low Prices and fully guaranteed

Send for Circulars and Specimen Charts.

The Bristol Co., Waterbury, Conn.

IT PAYS to advertise in The Iron Trade Review.

The genuine is stenciled "Apollo-Vandergrift"

APOLLO BEST BLOOM GALVANIZED IRON.

All workers in galvanized iron agree that Apollo is best.

It is cheapest too.

Apollo Iron and Steel Company
Vandergrift Building
Pittsburgh

Works: Apollo and Vandergrift, Pa.

MINING ENGINEER, CHEMIST, ASSAYER.

BENEDICT CROWELL,
Atwater Building, Cleveland.

ENTERPRISE BOILER COMPANY
YOUNGSTOWN, O.

Draught Stacks, Blast Furnaces and Heavy Plate Work a Specialty.
Write for Estimates.

POWER TRANSMISSION
W. A. JONES FOUNDRY & MACHINE CO.
53-59 So. JEFFERSON ST. CHICAGO.

Are You Using Babbitt Metals?

If you want a strictly high grade anti-friction metal, try our "HIGH SPEED" Babbitt, at 18 cts. per pound, put up in boxes of 50 and 100 pounds. Once tried, always used.

SWARTS METAL REFINING CO., Anti-Monopoly House, 20 and 22 N. Desplaines St., Chicago, Ill.

TURNBUCKLES.

Cleveland City Forge & Iron Co.,
CLEVELAND, O.

Blakeslee Steam Jet Pump.

REASONS FOR ITS USE:

1. Simplicity. 2. Is independent of engine. 3. Will pump sandy or impure water. 4. Have no valves and no wear. 5. Not subject to freezing. 6. Economy and reliability. 7. All parts interchangeable. Write

BLAKESLEE MFG. CO., Du Quoin, Ill.

LAKE SUPERIOR PIG IRON.

For Grey Iron, Malleable and Car Wheel Castings.

PURITAN

GENUINE CONNELLSVILLE COKE.

FORSTER, WATERBURY & CO.,
636-638 Rookery, CHICAGO

DICKMAN & MACKENZIE,

CLEVELAND, 71 Atwater Bldg. CHICAGO, 1224 Rookery Bldg.

Mining properties examined. Ores sampled at mines, furnaces and all lake ports. General analyses of Ores, Slags, Metals, Fuel, Foundry Materials and Products, etc.

CHEMISTS AND ENGINEERS.

Frank L. Crobaugh,

ANALYTICAL CHEMIST AND ASSAYER.

Ores sampled at lake ports, mine and furnace. Foundry mixtures a specialty. Experimental work conducted for manufacturers. General analytical and consultation work.

LABORATORY:
Cor. Superior and S. Water Sts., Cleveland, O.

FUEL GAS PLANTS.

American Gas Furnace Co.,
23 John St., N. Y.

W. S. ROCKWELL & CO.,

OIL FURNACES.

26 Cortlandt St., New York City.

See large Advertisement of

B. F. STURTEVANT CO.,
Boston, Mass.,

On Page 25.

BLOWERS, FANS, ENGINES.

Between the Lakes and the Gulf, the Mississippi and the Allegheny Mountains—the best buying section of the United States—is the BULK of THE IRON TRADE REVIEW'S circulation. In this section advertisers in all trade papers get best returns.

THE UPSON NUT CO., Cleveland, O.

MANUFACTURERS OF

MACHINE AND CARRIAGE BOLTS, HOT FORGED AND COLD PUNCHED NUTS, LAG SCREWS, BOLT ENDS, WASHERS, ETC. Catalogue and Prices on Application.

Riveted Steel Pipe, Stand Pipes, Receivers.

WM. B. POLLOCK & CO.

with inquiry please give ad. No. 6. YOUNGSTOWN, O.

Blast Furnaces, Steel Plants, Boilers, Tanks, etc.

Red Cedar,

PINE OR CYPRESS.

Any Size, Any Shape.

WILLIAMS MFG. CO.,
Kalamazoo, Mich.

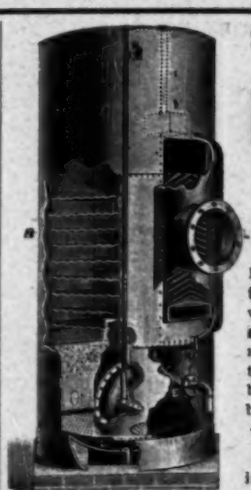
Miller, Wagoner, Fieser & Co.

PIG IRON, COKE.

Columbus, O., Hayden Bldg.
Chicago, Ill., Monadnock Bldg.
St. Louis, Mo., Bank of Com. Bldg.
Pittsburg, Pa., Hamilton Bldg.

Steel Stamps and Stencils.

FULLHARTY, J. H. & Co., Rubber Stamps Seals, Stencils, Automatic Check Punches and Numbering Machines. 92 Seneca St.



Stilwell's Patent Lime Extracting

Heater AND **Filter**

COMBINED.

Is the only lime extracting Heater that will prevent scale in steam boilers. Removing all impurities from the water before it enters the boiler.

Thoroughly Tested.

Over 8,000 of them in daily use.

The Stilwell-Bierce & Smith-Vaile Co.,
Dayton, Ohio.

AULTMAN

ELEVATING AND CONVEYING Machinery.

Billet and Hot Wire Carriers, Coal, Coke and Pig Iron Elevators and Conveyors.

THE PREISTMAN SAFETY OIL ENGINE.
(Not Gasoline.)

Designs and estimates furnished for complete factory and boiler house equipment. For further information, catalogue and prices, write to

THE AULTMAN COMPANY,
Canton, Ohio.

12 Standard Types AIR COMPRESSORS with a large number of Special Patterns.

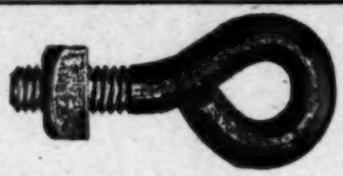
Covering the requirements of every application of compressed air. Each machine equipped with the most improved accessories relating to the economical production of compressed air. Send for new catalogue.

Rock Drills, Stone Channelers. | THE **Ingersoll-Sergeant** Drill Co., Cleveland, New York. | Coal Cutters. The Pohle Air Lift Pumps.

Rockford Bolt Works, Rockford, Ill.

ALL KINDS OF

Bolts, Lag Screws, Rivets, Washers and Odd Bolt Work.



Mention the Iron Trade Review.

IT PAYS to advertise in The Iron Trade Review.

The **CROSS** OIL FILTER

actually reduces oil bills 50% or more. It has been on the market 8 successful years and is used in 18 countries. Send for descriptive circulars, etc.

The BURT MFG. CO.
Akron, Ohio, U. S. A.

AIR COMPRESSORS

Thoroughly up-to-date and the most simple, durable and economical machines on the market. Built on improved lines.

ROCK DRILLS, AIR LIFT, PUMPS, ETC.

Send for catalogue

RAND DRILL CO.

100 Broadway, New York.
1328 Monadnock Block, Chicago.

O. TEXTOR,

Chemist and Metallurgist

Analyses made of Metals, Ores, Fuels and Supplies for Furnaces, Steel Works and Foundries. Ores sampled at mines, furnaces and lake ports. Advice furnished to operators of Blast Furnaces Steel Works and Foundries. Mining properties reported upon. For 12 Years Chief Chemist to the Cleveland Rolling Mill Co.

158 Superior St. CLEVELAND, O.

AIR COMPRESSORS

For every application of Compressed Air Power.

Complete Catalogue upon application.

Clayton Air Compressor Wks.

26 Cortlandt St., NEW YORK.

CABLE ADDRESS "METALFAC-CHICAGO" A.B.C. CODE

E. H. STROUD & CO.,
METAL FACTORS.
The Products of and Supplies for
IRON · STEEL · TIN-PLATE · BRASS
COPPER · LEAD · & · ZINC · WORKS.
36 La Salle Street 100 William Street
CHICAGO. NEW YORK.

THE ROBERT W. HUNT & CO.
Bureau of Inspection, Tests and Consultation.

PITTSBURG:	CHICAGO:	NEW YORK:
Park Building.	1137 The Rookery.	90 Broadway.

Reports on iron and steel processes and plants. Inspection of steel rails, splice bars, railroad cars, wheels, axles, etc. Chemical Laboratory—Analysis of ores, iron, steel, oils, water, etc. Physical Laboratory—Test of metals, drop and pulling test of couplers, draw bars, etc. Efficiency tests of boilers, engines and locomotives.

F. A. EMMERTON,

Analytical Chemist,

AND METALLURGIST.

Ores sampled at lake ports, mines and furnaces. Mines and Metallurgical Processes examined. Analyses made of Ores, Metals, Fuels, Railroad and Foundry Supplies, etc.

9 Bratenahl Building, CLEVELAND, O.

John T. Jones & Co.,

Mines, Prospects, Explorations and Mineral Lands, examined, experted, practical tests made and reported. Reliable and practical sampling done. Chemical analysis made. All work done by practical expert. Best of reference as to experience and reliability. Address

Suite 32, 115 Monroe St.,
MONTAUK BLOCK, CHICAGO, ILLS.

Millett's Patent

CORE OVEN.

The best in the world.

MILLETT CORE OVEN CO., Brightwood, Mass.

ARMSTRONG BORING TOOL

ARMSTRONG BROS. TOOL CO. Pat. March 12, 1895. Send for Circulars.

98 W. Washington St., CHICAGO.

THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. OCTOBER 6, 1898. CHICAGO, ILL. NUMBER 40

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The essential strength of the iron market keeps asserting itself, apart from the changing incidents of weekly records. Finishing mills are not all booked so far into the future as was the case in early September, but the business in process of development dispels any trace of anxiety as to the future. All indications are that the tide is to rise even higher when plans now on foot are carried out. The single railroad enterprise which American capital will push in China is a matter of millions for the works of this country. The development of home resources, moreover, seems certain to go forward with a new impulse, after five years of quietness. Though its tonnage is much below that of the Bessemer furnaces, the trade in foundry iron is for the time being of most interest, in view of the effort only a few months ago to organize against the demoralization from which it had long suffered. The trouble has been cured in the natural way, whereas the elaborate restrictive plan failed to make friends. Under the leadership of the Southern producers, whom the export trade has made independent, the foundry furnaces have been gradually taking higher ground, and to-day the situation is stronger than at any time since 1895. It is difficult to get accurate data, but there is reliable testimony that the melt of iron in foundry cupolas has grown gradually of late. Consumers, who have refused to believe that anything like a scarcity could occur in foundry pig iron, are now finding furnaces unable to promise delivery on new business in certain grades, before January or February. In the West buying is light; in middle territory and the East there has been a steady business. Some of it has been on the basis of $7.75 Birmingham for No. 2 iron, and Northern furnaces in many cases have worked up 25 cents higher in the past two weeks. Charcoal irons are stronger, and the higher numbers in particular are more difficult to get. In the export trade it is noticed that the grades of Southern irons most desired by foreign buyers are even now quite well taken up, with the export season only fairly opened. Warrants, it would appear, are largely in foreign hands, and stocks in yards have been further reduced. It is believed much of this iron is held by investors, but if any considerable tonnage goes into consumption it will be on export orders. The production of Bessemer iron is increasing somewhat, but more of the furnace capacity in the Mahoning and Shenango valleys is now on foundry and basic irons than before the recent restrictive movement started. Government work at Eastern shipyards is increasing the demand upon plate mills. There are preparations, too, for considerable work in lake yards. If to these requirements are added a share of the Coolgardie work now pending, there will be even a greater glut of plate mills. The steel rail mills are holding prices more firmly and a buying movement for 1899 promises to be not long delayed. Bars are weaker again and no large amount of business was done at the higher quotations of September.

PITTSBURG.

OFFICE OF *The Iron Trade Review and Industrial World.*
801 TRADESMEN'S BUILDING, Oct. 5.

The week has failed to develop anything out of the ordinary. The market is generally very healthy and all indications point to the permanency of the present condition. Foreign inquiries are coming in in gratifying numbers and some orders are being placed in spite of the advanced ocean freights.

PIG IRON.—The furnacemen's *bete noir*, "outside iron," is again in evidence. Several good sized lots can be had for less than the pool price, one of 5,000 tons being offered around among the large consumers at $9.85 and $9.90 valley. No buyer was found, as all are filled. The general market is quoted at $10 valley and $10.50 to $10.55 delivered Pittsburg, but little or nothing is being done, one sale of 1,500 tons for Pittsburg and one of 1,000 tons to an Eastern works being about the maximum of the week's transactions. Gray forge is quoted from $9.40 to $9.50, with little doing. Foundry irons are unchanged in price but considerable movement in lots of one or two carloads is noted. No. 2 is quoted from $10.10 to $10.25. Prices are as follows:

Bessemer, valley furnace	$ 10.00
Bessemer, Pittsburg	10.50 to 10.55
No. 1 Foundry	10.50 to 10.65
No. 2 Foundry	10.10 to 10.25
No. 3 Foundry	9.65 to 9.85
Gray Forge, valley furnace	9.00 to 9.10
Gray Forge, Pittsburg	9.35 to 9.45

BILLETS AND RODS.—The steel market is very quiet, little movement being noted. The quotation is about $16, maker's mill, Pittsburg, although claims are made of quotations slightly under the above. Some mills in order to fill up for the rest of the year on sheet bars have broken the market and offered that product at about $17. There is very little business, however, for them to get, even by this means, as most consumers are full. The nominal quotation is from $17.25 to $17.50, maker's mill, Pittsburg, and $17 to $17.25, Wheeling and Valley. Rods are firm at $22 and there is still considerable foreign inquiry.

IRON AND STEEL SKELP.—Demand continues steady but without any rush. Prices are as follows: Grooved iron skelp, 1.10c to 1.12½c; sheared iron skelp, 1.22½c to 1.25c; grooved steel skelp, 1.22½c to 1.25c; grooved steel skelp, 1.02½c to 1.05c; sheared steel skelp, 1.10c to 1.12½c.

PIPES AND TUBES.—The large order of the Standard Oil Co. calling for 17,000 tons of line pipe was divided between the Oil City Tube Co. and the Chester Pipe & Tube Co. The local conditions are as for some time past. The manufacturers are in command of the situation and business is taken or refused according to its attractiveness. Mills are much behind on their orders and the present outlook is that they will not soon catch up. The additional discounts of six tens for less and six tens and two and a half per cent off list for car load lots are still quoted. Base discounts are: Butt weld, black, 55 per cent off; lap weld, black, 65 per cent off; butt weld, galvanized, 47½ per cent off; lap weld, galvanized, 52½ per cent off. Discounts on merchant boiler tubes are as follows: 2¼-inch and smaller, 72½ per cent off; 2½ inch and larger, 75 per cent off. Inserted joint casing is now quoted at 60 off and screw and socket joint casing at 60 and 10 per cent off.

SHEETS.—The mills generally are busy and report a good volume of new business, although some few seem not to have participated in the general conditions. The heavier gauges are in the best demand. No. 28 is quoted at 1.95c, although

recent business amounting to something over 500 tons is reported at 2c for No. 28. Galvanized are quoted from 80 and 7½ to 80 and 10 per cent off list, with usual freight allowance.

STRUCTURAL MATERIAL.—The mills are very busy and the demand continues excellent. Steel for the addition to the State House at Columbus, O., about 600 tons will likely come to Pittsburg. Some other building projects, both East and West, will soon be figured on by the mills. Prices are firm as follows: Beams and channels, 3 to 15 inches, 1.20c; 18 to 24 inches, 1.30c; tees, 1.25c; zees, 1.20c and angles 1.10c. Universal plates alone at 1.15c; with other shapes 1.05c.

PLATES.—Most of the material for the four monitors, bids for which were opened last week, will come from Pittsburg. The mills are very busy on orders booked some time since, specifications having come in very plentifully during the last two weeks. The volume of new business is excellent and it is almost impossible that any slacking up at the mills should develop during the rest of this year. Prices are as follows: Tank, 1.15c; shell, 1.20c; flange, 1.25c; fire box, 2c and upwards.

RAILS AND TRACK MATERIALS.—The orders are still far in excess of the supply as to light rails, and business in the heavy section rails is in splendid condition. The former are quoted from $19 to $19 50, the latter at $18. Track materials are in steady demand, with prices as follows: Spikes, 1.50c; track bolts, 1.65c to 1.70c; splice bars, 1.10c to 1.15c. Links and pins are quoted at 1.20c.

SPIEGEL.—Spiegel is quoted at $23 50 to $24, delivered.

FERRO-MANGANESE.—The quotation continues $50 for 80 per cent domestic delivered.

SPELTER.—This unstable product is now quoted from 4.85c to 4.90c.

OLD MATERIAL.—The movement is rather slow all along the line, although slightly better than last week. The largest reported sale of the week was 1,000 tons of heavy mixed steel scrap at $10.50. Other materials are quoted as follows: Old iron rails, $13 75 to $14; wrought scrap, $11.50; busheling scrap, $9 25; car wheels, $10.50; cast borings, $6, net; cast scrap, $9; iron axles, $6, net; steel axles, $12.50, gross; charcoal scrap, $10, gross; billet and bloom ends, $11; machinery scrap, $9; wrought turnings, $8; steel rails, $10.

CHICAGO.

OFFICE OF *The Iron Trade Review and Industrial World.*
1522 MONADNOCK BLOCK, Oct. 5.

The market has been quiet, with small sales of pig iron, and fairly large sales of steel. The rail situation is unchanged. The meeting of rail makers was held at New York last week, but no conclusion was reached, and an adjournment was taken until Tuesday of this week. It is reported that fully 90 per cent of the stock of the Minnesota Iron Co., the Illinois Steel Co. and the Elgin, Joliet & Eastern Railroad has been deposited with the trust companies, and the Federal Steel Co. deal is now an assured fact. Stockholders have until Oct. 10 to make the cash payments necessary, and it is not likely that any meeting for the election of officers will be held until after that date.

PIG IRON.—Sales of pig iron from both Northern and Southern furnaces have been small, and the demand does not appear to have increased. The consumers are taking their iron on previous orders as fast as the furnaces can get it out, however, and the market, consequently, is fully as strong as it has been. The largest Southern company is still asking 25 cents more for its iron than the other Southern producers, and there is a prospect that the low seller will make an advance of that amount within a short time. Quotations are repeated from last week:

Lake Sup. Charcoal	$11 50 @ $13 00	Southern Coke No. 3	$10 10
Local Coke Fdy. No. 1	11 50 @ 12 00	Southern No. 1 Soft	10 80
Local Coke Fdy. No. 2	11 00 @ 11 50	Southern No. 2 Soft	10 65
Local Coke Fdy. No. 3	10 75 @ 11 00	Southern Silveries	11 25 @ 11 50
Local Scotch Fdy. No. 1	11 50 @ 12 00	Jackson Co. Silveries	12 50 @ 14 50
Local Scotch Fdy. No. 2	11 00 @ 11 50	Ohio Strong Softeners	12 00 @ 12 50
Local Scotch Fdy. No. 3	10 75 @ 11 00	Alabama Car Wheel	15 00 @ 16 00
Southern Coke No. 1	10 85	Malleable Bessemer	11 50 @ 12 00
Southern Coke No. 2	10 60	Coke Bessemer	11 50 @ 12 00

BARS.—There is a fair demand, and the local mills are selling just about their output every week. One or two good sized contracts were placed last week, but the bulk of the business was in small lots. Common iron is still quoted at 1.05c to 1.10c; guaranteed at 1.10c to 1.20c; and soft steel bars from billet stock at 1.15c to 1.20c.

RAILS AND TRACK SUPPLIES.—Local mills are taking no business, and it is not likely that any will be done until the result of the New York meeting of rail makers is known. Rails are still quoted at $20, Chicago. Other quotations are as follows: Steel splice bars, 1.15c to 1.25c; track bolts with square nuts, 1.80c to 1.90c; hexagon nuts, 1.90c to 2c; spikes, 1.55c to 1.60c.

BILLETS AND RODS.—There is a good demand for both billets and rods, and considerable business could be done if the mills could handle it. Sales of the week were only small. Billets are still quoted at $17, and rods at $22.50.

CAR ORDERS.—The only business placed last week was two or three small orders for cars for Western roads. Car material is in large demand and good sales are being made all the time.

PLATES.—The demand is excellent, and several good sales were made last week, with others in prospect. Most of the business is in small lots, but one or two good sized contracts were placed. Quotations are made as follows: Tank plates, 1.20c to 1.30c; flange steel, 1.30c to 1.40c; firebox steel, 1.85c to 5c.

STRUCTURAL MATERIAL.—The one large contract placed last week was that for the McCormick building, which will take 2,000 tons of material. General business was excellent, and footed up a good total. Quotations are unchanged, as follows: Beams, 15-inch and under, 1.35c to 1.40c; 18-inch and over, 1.45c to 1.50c; angles, 1.25c to 1.30c; plates, 1.20c to 1.30c; tees, 1.40c to 1.45c; zees, 1.35c to 1.40c. Small lots from stock are quoted at ¼c to ½c higher.

SHEETS.—The demand for both black and galvanized sheets has been good, and sales last week were fully up to the average. Several good inquiries are in the market at present. The market is firm at 2.10c to 2.15c for black and 80 and 5 per cent discount for galvanized.

MERCHANT STEEL.—Sales of steel were of considerable volume last week, although most of them were for small quantities. Only a few large sales were made in the week. The demand for future business is good, and dealers are looking for a good trade this month. Quotations follow: Open-hearth spring, tire and machinery steel, 1.65c to 1.75c; smooth finished machinery steel, 1.60c to 1.70c; smooth finished tire, 1.50c to 1.60c; tool steel, 5 50c to 7.50c; specials, 11c and upwards.

SCRAP.—The market has been quiet, with only small sales of any kind of scrap. There is some demand for old iron rails, but only a few sales were made last week, and none of them were large. Dealer's selling prices are as follows:

Old iron rails, gross	$12 50 @ $12 75	Axles, net	$14 25 @ $14 75
Old steel rails, long, gr.	10 50 @ 11 00	Cast borings, net	4 25 @ 4 50
Old steel rails, short	8 75 @ 9 00	Wrought turnings, net	6 00 @ 6 50
Old wheels, gross	11 00 @ 11 50	Axle turnings, net	7 00 @ 7 25
Railroad forge, net	11 50 @ 12 00	Mixed steel, gross	7 25 @ 7 50
Dealer's forge, net	10 00 @ 10 50	Stove plates, net	5 75 @ 6 00
No. 1 mill, net	7 50 @ 8 00	Heavy melting steel, gr.	8 25 @ 8 50
Heavy cast, net	8 50 @ 9 00	Old iron splice b., net.	12 75 @ 13 00
Malleable cast, net	8 00 @ 8 50		

CLEVELAND.

OFFICE OF *The Iron Trade Review and Industrial World.*
27 VINCENT ST., Oct. 5.

Sales of ore continue to be made in such lots as are usual with the close of navigation but a few weeks ahead. The condition of Lake Erie dock stocks, meantime, indicates that ore is getting somewhat better handling than at this time last year. Ore freights are on a basis of 60 cents from Marquette, with 75 cents asked from the head of the lakes, while Escanaba is nominal at 55c, no tonnage being offered. September, 1897, was a month of heavy ore shipments, and while all official figures from upper lake docks are not at hand, the indications are that the record for last month will show a slight falling off.

PIG IRON.—While no general buying movement in foundry iron is looked for in the last quarter, there is a steady demand for foundry grades, and a call for shipments indicating well sustained consumption. Valley furnaces are more generally adhering to $9.75 for No. 2 foundry and those better sold have advanced upon this. The inability of Southern sellers to insure deliveries on new business in certain grades before Jan. 1, and in some cases Feb. 1, makes it possible for Northern furnaces to get better prices, and several have been asking an advance of 25 cents in the past week. There are indications that the difficulty to secure deliveries may be more pronounced in the near future. Forge iron is firm at $9, valley furnace, or $9.10 to $9.15 at near-by mill. Sellers of Lake

Superior charcoal iron find that their difficulty is not in selling but in meeting the demand and making shipments on orders booked. On the higher numbers the output of the furnaces is sold for three or four months. One furnace is out of the market for the time being. Prices are firm and there is no willingness to make concessions no matter what the quantity. One furnace was added to the list of those active in the Mahoning Valley the past week and production is increasing. Large outputs are the rule. Deliveries are being made steadily on contracts and some heavy requirements are yet to be provided for in the first five months of next year. We continue to quote $10, valley furnace. Coke consumption has increased somewhat. The quotation is still $1.50 for Connellsville, but running contracts are at something less than this, and cokes other than standard Connellsville have been sold at $1.30 and $1.35. We quote pig iron f. o. b. Cleveland:

Bessemer,	$10 65	Valley Scotch No 1	$10 65
No. 1 Strong Foundry	10 40@10 65	Valley Scotch No. 2	10 15@10 40
No. 2 Strong Foundry	10 15@10 25	Gray Forge	9 50
No. 3 Foundry	9 65@ 9 90	Lake Superior Charcoal.	11 50

BILLETS AND RODS.—The market is quiet and no inquiries of any size are pending in steel. We quote $16 25 for billets, $17.75 for sheet and tin plate bars, and $22 for rods.

FINISHED MATERIAL.—Some shipyard work is in the air, and inquiries indicate that contracts are under consideration. In any event something will be done on yard account. About 2,500 tons of plates are being figured on and 1,500 tons of shapes. Plate mills are now more nearly on a par as to time for which the capacity is engaged, five weeks being usually the earliest guarantee on an average order. We quote tank at 1.17½c to 1.22½c Cleveland. Most Pittsburg quotations are firm at 1.15c. Structural mills are not booking tonnage equal to their current outputs, and specifications are rather slower. Sheets are unchanged. In general the mills are well filled. We quote 2.02½c to 2.05c Cleveland for No. 27. Steel bars have weakened in the past 10 days. Pittsburg quotations of 1c do not get the business. With valley mills the basis is about 1c at mill for steel and 95c to 97½c for iron.

OLD MATERIAL.—The situation is a trifle more satisfactory for sellers. Trades between railroads and mills direct are more frequent in particular lines. The heavy consumption of foundry iron and the firmer prices for foundry grades have been felt in cast scrap, which is now $8 Cleveland. We quote old iron rails at $13.75 to $14; No. 1 wrought scrap at $10.75 to $11; old car wheels at $11; old steel rails, $10.50.

CINCINNATI.

Oct. 4.

The past week has been one of considerable animation. The demand for Southern foundry irons, especially soft grades, has been so great that some furnaces are unable to quote for delivery this year, and one Southern company in certain grades can promise nothing on new orders before March, 1899. It is exceedingly difficult, and in many cases absolutely impossible to supply the demand. Consumption is evidently still expanding slightly, evidenced by the placing of orders in liberal additions to old ones, which were, at the time they were entered, deemed adequate for all necessities. Owing to the advanced prices on Southern irons, Northern furnaces are enjoying a larger business at figures which have hardened, and should demand continue, will be advanced doubtless in the near future. It seems evident that if the views of optimists are realized, the scarcity of foundry irons will be keenly felt and that higher prices will follow. We quote for cash f. o. b. Cincinnati: Southern coke No 1 foundry, $10 to $10.25; No. 2, $9.75 to $10; No. 3, $9.25 to $9.50; No. 4 and gray forge, $8.75 to $9; mottled, $8.75 to $9; No. 1 soft, $10 to $10.25; No. 2, soft, $9 75 to $10: Hanging Rock charcoal, No. 1, $14.50 to $15.50; Jackson Co., silvery, No. 1, $12 to $12.50; standard Georgia car wheel, $14.25 to $15

PHILADELPHIA.

Oct. 4.

There has been no special activity in pig iron and in some cases buyers report lower offers on low grade irons; but otherwise there is no weakness. Order books are well filled and deliveries are well taken. But there is at the moment no further upward tendency. Lehigh Valley furnaces have been low for some time past, but it is believed that values will now be more firmly held in that quarter. Stocks at Eastern furnaces have been declining and order books showed in the summer months a steady gain in sales. It is reported that a recent canvass among Lehigh Valley furnaces showed 50,000 tons in stockpiles, at six plants, while bookings amounted to 200,000 tons. Quotations are as follows: No. 1X foundry, $1150 to $11.75; No. 2X foundry, $10.75 to $11.25; No. 2 plain, $10.50 to $10.60; standard mill iron, $10 25 to $10.40; ordinary mill iron, $10. There is not much inquiry for steel but prices are fairly steady at $18. Bids for large lots are not made at present. The prospect in finished lines continues very favorable. Plate demand shows no let-up, and in shapes there is a considerable tonnage to be figured on and much for which specifications are wanting. Bars are a trifle easier. We quote tank and universal plates at 1.30c to 1.35c delivered; refined bar iron at 1.15c delivered; angles, 1.25 to 1.30c; beams and channels, 1.40c. Buyers of old material are loth to pay higher figures and sellers in many cases are meeting them half way. We quote cast borings at $7.25; machinery scrap, $9.25; heavy steel scrap, $11; old iron rails, $12.75; old steel rails, $11; old car wheels, $10.50.

LAKE SUPERIOR IRON MINES.

The Minnesota state board of equalization, in session at St. Paul last week, considered the assessed valuations of the iron mines of the Mesabi and Vermilion ranges. State Auditor Dunn advocated increases varying from 5 per cent to 300 per cent. The mining companies returned value aggregating $5,021,951. The state auditor favored an increase of $1,500,000. He supplemented his recommendation with a report from D. E. Woodbridge, of Duluth, which took up the various properties and gave reasons for increasing the valuations upon them. In response to questions by the attorneys of the mining companies, Mr. Woodbridge explained how he arrived at the valuations he proposed. In the case of the Minnesota Iron Co., its stock was $16,000,000, worth at current prices $15,000,000 Its ownership of the railroad, already taxed, was $5,000,000. Its ownership of the fleet, bought out of the surplus, was $3.000,000. Allow $2,000,000 for the fact that some of the mines were nearly worked out. That left $5,000,000, of which 40 per cent is $2,000,000. And he proposed a valuation of $1,930,000 on their properties. The Chandler's ore was worth $3.15 in Cleveland, which made it 55 cents unmined. There were 3,000,000 tons in sight. Their dividends were $350,000 a year, or 35 per cent on $1,000,000 capital, and if it was not that it would be mined out in a few years an assessed valuation of $480,000 would be very light. The Pioneer, which was idle last spring, has been sold to the Oliver Iron Mining Co., which paid between $600,000 and $700,000 cash for the lease, and pays a 30-cent royalty on top of that. His schedule raises it from $166,000 to $249,000. The holdings of the Lake Superior Consolidated were brought up to $1.300.000, and he showed how he reached that. One mine was the Alpena, explored this summer, and found to have 2,500,000 tons He raised that from $7,000, to $28,000. There was the Moose, assessed at $40,000, for which $400,000 had been paid. Among other increases recommended by the state auditor, on the strength of Mr. Woodbridge, were the following: Biwabik, from $249,750 to $324,675; Oliver, from $111,000 to $122,000; Fayal, from $416,250 to $478,687.50; Mountain Iron, $416,250 to $478,687.50; Pillsbury, from $75,000 to $150,000; Burt, Hull, Rust and Sellers from $55,500, $111,000, $55 000 and $83,000, to $66,500, $133,200, $66,600 and $99,900 respectively. At the hearing, Geo. St. Clair, asked Mr. Woodbridge how he arrived at the advance from $138,750 to $152,625 in the valuation of the Sparta. He replied: "The ore is high-grade, and worth 15 cents in the ground if any is on the Mesabi. The body is estimated at 1,000,000 tons." "So I supposed, myself," said Mr. St. Clair, "but I know now it is no more than 550,000. You have it assessed at $150,000 and I will sell it to Mr. Olcott now for $100,000." It is expected that the recommendations of the state auditor will be adopted in the main.

The Mountain Iron mine of the Oliver Iron Mining Co. has closed down after having shipped over 600,000 tons the past season.

Winston Bros., Minneapolis contractors, have filed a claim of lien against the Case hold interest of the Sparta Iron Co. in the Sparta mine. A balance of $24,475.9 is claimed to be due on stripping contract.

The explorations being conducted by the Minnesota Iron Co., under the city of Tower, Minn , are meeting with success. A diamond drill operated from the bottom of No. 8 shaft at Soudan is said to be in one of the largest bodies of ore yet found on the property. The vein runs toward the city.

THE IRON TRADE REVIEW
AND
INDUSTRIAL WORLD.

DEVOTED TO MACHINERY, METAL-WORKING AND FOUNDRY TRADES AND IRON AND STEEL MANUFACTURE.

PUBLISHED EVERY THURSDAY BY
THE IRON TRADE REVIEW CO.,
CLEVELAND, OHIO.

CLEVELAND, 27 VINCENT STREET.
G. H GARDNER, President. A. I. FINDLEY, Editor

CHICAGO:
1522 MONADNOCK BLOCK.
B. M. GARDNER, Associate Editor and Western Manager.

PITTSBURG:
808 TRADESMEN'S BUILDING.
J. B. ALLEN, Manager.

Subscription (strictly in advance), $3 per annum. Advertising Rates Furnished on Application.

The Cleveland News Co. will supply the trade with THE IRON TRADE REVIEW through the regular channels of the American News Co.

ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER

OCTOBER 6, 1898.

NEW AMERICAN INTEREST IN THE ORIENT.

Ex-Senator Calvin S. Brice gives in an interview details of an important project in which American capital is about to engage in China. It involves the building of 900 miles of railroad from Han Kow, in the heart of the valley of the Yangtse-Kiang, to Canton, almost directly south, and thence to the seacoast opposite Hong-Kong. The American syndicate, which includes Standard Oil, American Sugar and Arbuckle Coffee Co. money, has spent $100,000 investigating the conditions of China; it has deposited a forfeit of $100,000 with the imperial government; and now that the concession is assured, engineers will sail within a week to begin the work. The Chinese government issues $30,000,000 to $40,000,000 bonds to cover the cost of the road, and these the American syndicate is to float. The rail requirements of the proposed road, which may be put at 100,000 tons, are one significant feature of the project; for it goes without saying that American rail mills will get this business in competition with the world. The rolling stock will mean further large contracts for American manufacturers. But the great benefits of such a colossal enterprise are not those which appear at first count. The real significance of the entrance of an American railroad-building syndicate in China, operating so important a line in conjunction with the imperial government, is in the trade relations of which this project is but the fore-runner. The possibilities of trade in the Pacific are only beginning to be appreciated in the United States; and now that Hawaii and the Philippines have pointed the way to the countries beyond, capital, that has hitherto been loth to consider an investment in China, becomes at once available to provide means of distributing American products to our future Asiatic customers.

With great trans-continental lines giving ready access to the Pacific Coast, and trade with China, Japan and the Pacific Islands only waiting the provision of proper transportation facilities for its development, there is no reason why our Pacific seaboard should not in time become the home of important shipbuilding interests, contributing their part to the restoration of American supremacy on the sea.

EXPORTS OF AMERICAN COAL.

The recent strike of coal miners in Wales is ended, but it is not so certain that the exports of American coal which it stimulated will cease. The Cardiff district operators report that quotations on American coal have been an uncomfortable feature in the past two or three months, in markets which they have regarded as all their own; and they are not made less uneasy by noting the triumphs of American iron and steel in the export trade, though similarly these shipments were referred to at first as expensive advertisements. Well informed English journals call attention to the fact that the cost of producing coal in the United States has been lessening year by year, which, with the low freight rates to tide water, is in contrast with increasing mining cost in Great Britain and the heavy losses the industry there has sustained from the strikes of recent years.

West Virginia coal, for example, can be delivered in Enlgish waters at 8s. 6d. to 9s. a ton, as against 9s. 6d. to 10s. for Welsh coal, and during the recent Cardiff district strike foreign consumers who had depended upon the Welsh supply entirely placed trial orders in the United States. In July, 2,400 tons of American coal was shipped to the British Isles, practically the first shipment of coal in that direction. But the markets in South America, Africa and Asia, which hitherto have depended on British coal, took something like 150,000 tons of American coal, it is estimated, in the past summer. Thus our exports of bituminous coal in July were 278,866 tons, as compared with 180,161 tons in July, 1897.

It is not too much to expect that the United States at no distant day, will be an important source of the world's fuel supply, as it is now of so many lines of manufactured articles.

REFERRING to the experiments made by the Oliver Iron Mining Co. in drying iron ores, as recently noticed in these columns, the *Engineering News* says:

> It has been found that on an average 10 per cent of water could be dried out. It is estimated that the saving in freight on the moisture in 3,000,000 tons of ore would amount to $700,000 per year. It is said that the ore will not reabsorb the moisture after it has been driven off. No plans have yet been prepared for carrying out the experiment on a large scale, and the difficulties of doing the work on a commercial scale, without too great cost for fuel and labor, are no doubt formidable.

The fuel consumption in the experiments already made was 50 to 55 pounds of coal per ton of ore dried, and the average moisture expelled was 10.5 per cent. Figuring the freight from Mesabi mine to Pittsburg at $2.38, the gross saving on moisture would be about 25 cents to the ton. Coal delivered at Mesabi mine would cost $2.90 a ton, if full rate from mine to Lake Erie port is figured and the same rate is allowed for the Minnesota rail haul as

for ore from the mine to upper lake dock—80 cents. The leading Pittsburg interest, in hauling coal to Conneaut in ore cars that otherwise would return empty, would get coal to Mesabi mine at somewhat less than $2.90. But even at full price the fuel cost per ton of ore dried would not be more than 7 cents a ton on the basis of recent experiments. Ore waste, labor cost, machinery investment and expense should not prevent a net saving of 10 to 15 cents out of the gross freight economy of 25 cents. On the Mesabi and Gogebic ores of this single interest, such a saving would amount to $300,000 to $400,000 in a season. There are some difficulties connected with the handling of material and the loss of ore dust in the use of the hot air blower, but these are not insuperable.

PRODUCERS of charcoal iron report that the very large demand of the summer months for their high irons—Nos. 4, 5 and 6—due in part to the activity of works having contracts for war munitions, still keeps up. Wheel manufacturers are said to be using more charcoal iron than in the past few years, the thermal test now required by many railroads being given as the reason for the change. As the price of charcoal iron has come nearer that of coke iron in the past year, malleable foundries have extended their use of the former, in some cases choosing charcoal iron in place of considerably cheaper brands of coke iron. At the same time furnaces that have made a specialty of coke iron for malleable uses have found the demand taxing their capacity. Coke furnaces not in the habit of working to malleable specifications could not get this trade by impromptu effort; the result being that both charcoal and coke malleable producers have had all they could well care for. The surprise has been that the heavy consumption of iron by malleable concerns, prices have not made a larger advance.

RECENT statements of iron and steel imports, taken in connection with those for the corresponding periods in 1897 indicate an approach to a stable basis in this trade. The totals for July and for the seven months periods, it will be seen, agree quite closely. There will be a further shrinkage in tin plates; but our requirements of foreign wire, rods, tool steel, Swedish billets and bars, and other special lines are likely to remain close to the present figures for some time:

IRON AND STEEL IMPORTS TO THE UNITED STATES.—GROSS TONS.

	July.		January—July.	
	1897.	1898.	1897.	1898.
Pig iron	1,603	2,131	9,120	16,076
Scrap iron and steel	87	132	674	672
Bar iron	2,138	3,358	6,998	10,131
Iron and steel rails	39	.....	115	190
Hoops and band iron	1	.....	1	3
Ingots, blooms, etc	1,230	676	10,609	6,581
Sheets and plates	243	198	1,535	1,510
Cotton ties	.....	.....	105	.....
Tin plates	7,044	5,664	58,309	49,713
Wire rods	1,142	1,395	8,299	9,813
Wire	157	168	1,406	1,237
	13,684	13,722	97,171	95,926

THE stock in the yards of the American Pig Iron Storage Warrant Co., Sept. 30 was 215,600 tons, and only 700 tons put in yard in the preceding 10 days.

THE Biwabik Bessemer Co. has given a stripping contract to the Drake & Stratton Co. for 300,000 yards at the Biwabik mine.

FEDERAL STEEL CO.

Capacity of Illinois Steel and Lorain Plants.

TO THE EDITOR:

I note your article in this week's issue on the Federal Steel Co., and as I am a regular reader of your paper and take a good deal of interest in your information, I don't like to see a possible error. You state: " . . But estimates based on an output of 2,000,000 tons of finished material from the Illinois and Lorain plants evidently contemplate additions to present capacity. . . Wall Street figures, which allow for 3,000,000 tons of ore to be sold in the open market are evidently far astray."

Let me call your attention to Mr. Swank's Directory as an authority for the tonnage of output of different mills. You will there see that North Chicago mill, South Chicago mill, South Chicago (plates and open-hearth), Joliet, Union, and Milwaukee amount in all to 1,710,000 tons; and that Lorain is reported by the same authority at 300,000 tons, which makes up to the 2,000,000 tons. But the present capacity of the Illinois Steel Co.'s mills based, upon month to month experience, might be put down safely at 2,000,000 tons per annum, while Lorain has steel capacity to-day of 480,000 tons of ingots.

With regard to the 3,000,000 tons of ore to be sold in the open market, that is doubtless a mistake, as you will see from the aobve figures that it will take pretty nearly all the ore Minnesota can mine and all the Illinois Steel Co 's mines can give. Our mines at present give about 500,000 tons, but this can be increased to 1,000,000 tons; and the Minnesota can centainly mine and deliver 3,000,000 tons in 1899.

A. J. FORBES-LEITH,
Director in Illinois Steel Co.

46 Wall Street,
New York, Sept. 30, 1898.

[Our comment relative to the Illinois Steel Co.'s output the present year was based on a recent official statement that the consumption of ore in the ore year 1898-99 would be about 3,000,000 tons. Figuring roughly two tons of ore to a ton of finished material would give about 1,500,000 tons. As current output has been beyond this rate, as indicated above, the ore consumption will exceed considerably the ore estimate cited. —ED.]

Necessary Stock Deposits Made.

Considerably more than two-thirds of the Minnesota Iron Co.'s stock had been deposited with the Colonial Trust Co., of New York, before Saturday, Oct. 1, the date fixed for the closing of the transfers, and the requisite two-thirds of Illinois and Elgin, Joliet & Eastern was received. This insured the success of the deal and it was announced that the questions remaining were matters of detail. Stockholders have until Oct. 10 to make the cash payments required, and the election of officers will not take place until after that date. The name of H. H. Porter is prominently mentioned in connection with the presidency of the consolidated company. New names are discussed also, for places on the official list of the Illinois Steel Co. Ex-Gov. Flower, of New York, has made public the following relative to Federal Steel stock:

"The consolidation of the Illinois Steel, the Minnesota Iron, and the Joliet, Elgin & Eastern Railroad companies ought to prove a great success when it is finally completed. The earnings of the Minnesota Iron Co. last year were 10 per cent on its capital stock, and the Illinois Steel Co. earned over 12 per cent. In my judgment the Federal Steel Co. preferred stock at 70 is a cheap property, and I have little doubt of its paying a regular six per cent annual dividend. The $25 per share, for which a share of the common stock is issued, will give the Federal Steel Co. a cash capital of $10,000,000, which it can lend to its subsidiary companies as occasion requires. Its surplus products all go to Europe, where they find a market at living prices."

THERE is now only one Minnesota Iron Co. stockpile on the Mesabi range, that at the Canton mine, which will not be touched this year. It contains about 150,000 tons.

THE Rhode Island Perkins Horse Shoe Company, of Providence, R. I, have declared a quarterly dividend of 1 per cent on their preferred stock.

NATIONAL BOILER MAKERS' CONVENTION.

The tenth annual convention of the American Boiler Manufacturers' Association of the United States and Canada was held at St. Louis, Mo., Oct. 3, 4, 5 and 6. Owing largely to the increase in the boiler business, which made it impossible for many members to leave home, the attendance was not so large as had been expected, but, under the circumstances, was very gratifying to the officers.

Those present at the first day's session were the following: E. D. Meier, Henie Safety Boiler Co.; John O'Brien, John O'Brien Boiler Works Co.; Ben T. Affleck, R. B. Lyle, Illinois Steel Co.; R. Garstang, Southern Boiler Works; Jos. F. Wangler, J. F. Wangler Boiler Co.; J. E. Gatewood, *Age of Steel;* A. Thomson, Western Iron & Supply Co.; F. E. Palmer, with C. A. Thompson; Chas. J. Price, City Boiler inspector, all of St. Louis; Henry J. Hartley, Wm. Cramp's Ship Building Co., Philadelphia; Porter Pollock, John Kirby, Wm. B. Pollock & Co., Youngstown, O.; Maj. C. D. Rhodes, Sylvester Hogan, P. E. Carhart, Illinois Steel Co, Chicago; David J. Champion, Champion Rivet Co., Cleveland; John Overn, Chief Inspector Bureau of Steam Engines and Boilers, Philadelphia; C. M. Tudor, Tudor Boiler Mfg. Co., Cincinnati, O.; Geo. Whiting, Scully Steel & Iron Co., Chicago; B. M. Gardner, *The Iron Trade Review*, Chicago; E. E. Baker, Kewanee Boiler Co. Kewanee, Ill.; M. G. Weidner, Walsh & Weidner, Chattanooga, Tenn.; D. Grupe, Davenport, Ia.; Columbus Dill, Ashton Valve Co., Boston; F. R. Case, Hoopes & Townsend, Philadelphia; Samuel Borger, Borger Bros. & Co., Columbus, O; J. D. Farasey, H. E. Teachout Boiler Works, Cleveland; J. Don Smith, Valk & Murdock Co., Charleston, S. C.; M. McGregor, M. McGregor & Co., Chicago; Geo. M. Riley, Adolph Weidmann, National Tube Works, McKeesport, Pa.; D. Connelly, Cleveland Steam Boiler Works, Cleveland; R. H. Bate, W. T. Bate & Son, Conshohocken, Pa.; James Lappan, Jas. Lappan & Co., Pittsburg; J. H. Greenwood, Henry R. Worthington, Brooklyn, N. Y.

The convention was called to order Monday at 10 A. M., by President Henry J. Hartley, who made a short presidential address, reviewing the attainments of the association in the past. An address of welcome to the delegates was made by the Mayor of St. Louis, Henry Ziegenheim, who invited the visitors to make themselves fully at home during their stay. Mayor Ziegenheim spoke briefly of the hard times just over, and expressed the opinion that the outlook for the future in every branch of trade was never brighter. He referred to the fact that he has been in the banking business for the past 26 years, and said that the present condition of that business had never been equalled in his experience.

James Lappan, of Pittsburg, made a short response to Mr. Ziegenheim's welcome, and moved a vote of thanks, which was given unanimously, to the mayor, the local entertainment committee and the citizens of St. Louis, for the welcome accorded the delegates.

The minutes of the last meeting of the association were approved as published. Several letters of regret from absent members were read by the secretary.

The annual reports of the secretary and treasurer were read and approved. The report of the committee on Uniform Boiler Specifications was presented, and on motion, was made a special order of business for Tuesday morning.

The report of the committee on Betterment of Business Conditions was presented, and on motion, was made a special order of business for an executive session to be held Wednesday morning. The meeting then adjourned for luncheon.

At 2:00 P. M. the delegates assembled in the lobby of the Southern Hotel, and took cable cars to the Lemp and Anheuser-Busch breweries, the plants and products of which were thoroughly inspected. At 8:00 P. M. the delegates went in a body to visit the St. Louis Exposition, which is open during the present week.

The program for Tuesday included a business meeting in the morning, at which the report of the committee on Uniform Tests and other business was to be discussed; viewing the grand parade of the Veiled Prophet at 2:00 P. M., and the illuminated procession at 8:00 P. M.

Wednesday's program provided for reports of committees and the election of officers in the morning; lunch at Gast's Garden at noon, when the newly elected officers were to be installed. Thursday morning's program included unfinished business and viewing an experiment in boiler practice and tests, at the plant of the John O'Brien Boiler Works.

Personal.

Geo. B. Parker, of London, Eng., proprietor of the Embreville Furnace, Embreville, Tenn., has been in this country recently, inspecting the company's property and arranging for the starting of the furnace at Johnson City, recently leased by the Embreville interest. It is expected that Cranberry ores will be used.

Abram S. Patterson, treasurer of the Pulaski Iron Co., of Pulaski, Va., died at his residence at Port Kennedy, Montgomery Co., Pa., Sept. 27, of Bright's disease. Mr. Patterson, who was the son of Morris Patterson, a well known iron master, and at one time owner of the Montgomery Iron Co., at Port Kennedy, was born in Philadelphia, 46 years ago. Until the Montgomery Iron Co went into liquidation was its president for a number of years Until 1896 he was a partner with Charles L. Bailey, in the Chesapeake Iron & Nail Works.

E. H. Putnam, vice-president of the American Foundrymen's Association for the Southern States, has resigned his position, owing to his removal to another part of the country, and the executive board has elected Mr. James Bowron, of Birmingham, Ala., to the vacancy. The Tennessee Coal, Iron & Railroad Co., of which Mr. Bowron is vice-president, operates two foundries, one at Birmingham, Ala., and another at South Pittsburg, Tenn., and is about to erect a new foundry 240x80 ft. at Ensley, Ala. Mr. Bowron has been president for the past 12 years of the South Pittsburg Pipe Works.

Col. Millard Hunsiker, the representative of the Carnegie Steel Co., Ltd., at London, Eng., who has been at the home office for two or three weeks past, left Pittsburg last week, sailing from New York on Saturday on the Lucania.

Gen. James L. Botsford, for many years an officer of the Mahoning Valley Iron Co., is seriously ill at his home in Youngstown, O., and it is believed cannot recover.

Quality of Krupp Armor Plates.

According to present indications, the Krupp process of hardening armor plate for warships seems to be giving results superior to the older and better known Harvey process. Some trials recently made in the United States, at Washington, D. C., showed that projectiles with a striking velocity of 2,000 feet per second, passed clean through a Harveyized nickel-steel plate, while the striking velocity of a projectile of the same calibre had to be raised to 2,350 feet per second before it passed through a Krupp nickel-steel plate of the same thickness. The rule in such cases is that a projectile will pass through as many inches of wrought iron for each thousand feet per second of striking velocity as it is inches in calibre. Thus a six inch projectile with 1,000 feet per second of striking velocity will just perforate six inches of wrought iron; while with a striking velocity of 2,000 feet per second it will just perforate 12 inches of wrought iron. As the resistance of Harveyized nickel-steel is exactly double that of wrought iron, we must use twice the striking velocity to perforate a plate of this material. It is evident that a projectile of the calibre used in the Washington trials would have gone through a wrought iron plate of the same thickness as the two on trial with a striking velocity of 1,000 feet per second. The relative resistance of Harveyized and Krupp armor plates is, therefore, taking wrought iron as 1, as 2 is to 2.35. This gives the plate made by the Krupp process at the Carnegie Steel Works, at Pittsburg, a slight, though positive, superiority over British armor plate made last year by the same process, the ratio being 2.35 to 2.33. Of course, it is understood that when the test is one of armor plate only, the question of the relative penetrative power of projectiles plays no part in it so long as these are able to perforate the armor without breaking up.

The comparative figures giving the resistance of different kinds of armor plate, which were arrived at after exhaustive tests by British experts in the latter part of the year 1897, are interesting. The experts agreed that wrought iron 14 inches thick; steel-faced armor, 11 inches thick; Harveyized nickel-steel armor, 7 inches thick; and Krupp nickel steel, armor, 6 inches thick were equal in resisting power. The saving in weight thus effected by the substitution of Harveyized or Krupp armor for wrought iron is enormous.—[Cassier's Magazine for October.

THE DEMAND FOR CUT NAILS.

In our last issue some comment was made, prompted by an inquiry concerning the increase in the production of cut nails in 1897 over 1896. Attention was called to the fact that the production of cut nails in 1897 was practically the same as in 1895 though previously there had been a steady decline, beginning with 1887. We have asked several manufacturers of cut nails and dealers in nails whether there was any evidence that cut nails have recovered of late any of the ground lost in previous years, and, if so, to what the change is to be attributed. A few answers have been received and are given below:

La Belle Iron Works, Wheeling, W. Va.

Referring to our own experience in the cut nail business. We have noticed no appreciable increase or decrease in the volume of our business for two or three years. As a whole, there has been a material reduction in the amount of cut nails turned out in the West; although we believe that, as an offset to this, Eastern Pennsylvania has increased its output. Whether the increase there more than overcomes the decrease here, we do not know; nor are we prepared to state the exact increase, if any exists.

Wheeling Steel & Iron Co., Wheeling, W. Va.

We do not find any recovery of the demand for cut nails. On account of the nail pool, production was curtailed by the closing of many cut nail mills. Then all were let loose; and having been curtailed in production during the operation of the pool, the price being up, they afterwards ran to full capacity for a while until the price again went away off. We think cut nail production will not be so great in 1898 as in 1897.

Belfont Iron Works, Ironton, O.

The increase in production and sale of cut nails with us in 1897 was very much larger than that of the year 1896, and this year, up to the present time, has been an exceptionally good one for us, so far as quantity is concerned. The price, of course, has been extremely low, but the demand has been quite fair, particularly during the past three months. Our sales for July, August and September of this year have been larger than for a like period in any single year for quite a long while. We can hardly say to what we attribute the increased consumption of cut nails, but we do find a large number of firms buying these nails now that did not purchase them at all during the years 1896 and 1897. Particularly is this true in the Northwest.

Buhl Sons & Co., Detroit, Mich.

In reply to your inquiry as to the relative quantity of cut nails sold from '95 to the present time, would say that our experience has been that there has been a small increase in the demand for cut nails in the past two years. In this country it has been demonstrated that wire nails are absolutely unfit for shingling, also for siding on wooden houses, as they do not have sufficient holding qualities: and more particularly that, the heads being very thin, they rust off. We had a board brought to our attention, which was cut out of a roof which had been on but two seasons. The nails were in the wood, but the heads had rusted entirely off. It seems as though cut nails would be sold in at least the proportion they are sold now, for the above reasons.

C. W. Hackett Hardware Co., St. Paul.

Our demand for cut nails is almost nothing. Our sales up to the present time in 1898 are about one per cent cut nails and 99 per cent wire nails. This same percentage held good in 1897, and about the same in 1896; in fact, with us the cut nail business is almost entirely for clinch and casing nails. If it were not for these two kinds, we would not attempt to carry them in stock.

Kelly Nail & Iron Co., Ironton, O.

We think the cut nail is about holding its own. We regard it as very much superior to a wire nail for out-door work, particularly the 3d and 4d for shingling purposes. We think that in a few years such states as Kansas, where they have high wind for a few months in the spring, will conclude to use cut nails exclusively for shingling purposes, and in fact for all out-door work. There is no question whatever but that they are the best nail of the two, and for car works wire nails are a failure. In manufacturing wire nails, they have to be treated to a bath of sulphuric acid which entirely destroys the coating, and the rust begins on the nail from the time it is driven. What made the wire nail grow so fast is that there is usually no profit to the hardware man in the sale of nails, and when his customers used over 50 per cent of his purchases he usually decided not to carry steel cut nails.

Laughlin Nail Co., Wheeling, W. Va.

We attribute the gain in cut nails to the growing sentiment that they are better than wire nails, in that their holding qualities are greater and that they do not rust out as quickly in buildings.

Sizes of Rolls in Tin Plate Mills.

From the statements furnished by tinplate mills to the 1898 Directory of the Iron and Steel Works of the United States, *Tin and Terne* makes these deductions concerning the sizes of rolls most in vogue:

"In the hot mills, none but the older mills have rolls 22 inches in diameter or smaller, the prevalent size being 24 inches. The usual length is 32 inches, some few being longer to roll sheets wider than 28 inches. Of mills not reporting the size of their rolls, a number have their plants equipped partly or wholly with 26-inch rolls, and in a full report the 26-inch diameter would show up more strongly than it does in the summary given. The plants containing 26-inch rolls are either recently built or building, or the roll diameter has been changed from 24 to 26 inches recently.

"In the case of the cold rolls, none but old plants have rolls smaller than 20 inches diameter, and none are larger than 22 inches except where it was necessary to run the hot and cold rolls in one train. The tendency toward slower speed in the hot mill has been so marked of late that this arrangement is not at all satisfactory as regards the speed of the cold rolls, while of course the larger diameter is undersirable from other considerations. The favorite diameters are 20 and 22 inches, with a slight leaning toward 22 inches. This preference will not necessarily be permanent. The smaller diameter is preferable on all grounds except that it is not as strong as the larger size. With greater skill in handling the rolls safely, and a better appreciation of the advantages of the smaller roll, the 20 inch diameter may ultimately become the most common of all."

Krupp Armor Plate for the New Battleships.

Capt. O'Neill, chief of the Ordnance Bureau of the Navy Department, expresses his belief that the results of the recent tests of Krupp armor plate at Indian Head insure the adoption of Krupp armor for the three new battleships. The Krupp process, the use of which has been acquired by the Carnegie Steel Co., probably settles the long Congressional controversy over armor plate. Capt. O'Neill says Congress cannot refuse to vote the money for the new plate, the price of which will be about $525 a ton. As the process is patented, the Government cannot undertake to make the plate. It was proposed to do this with the Harveyized plate, when Congress determined that it could be made for $300 and the steel companies refused to turn it out at less than $400 a ton. In the construction of the battleships Oregon, Iowa and Indiana, an average of 3,000 tons of armor plate was used. The new Krupp plate will increase the cost of the battleships $500,000 each.

"There will be a decided saving in weight in using the Krupp armor," said Capt. O'Neill, "because a thinner plate of the new armor will give us as good protection as the thicker plate of the old. The heaviest armor plate now used is 16 inches thick. It is probable not more than 12 inches of the new armor will be needed. There will be no saving on the thin armor, because, whatever its toughness, a plate must be of a certain thickness to have any power of resistance; but it will be possible to protect some parts of the ship which are not protected now and still save about 350 tons weight on a battleship. That means a saving of $140,000 at $400 a ton; but this will not quite balance the additional cost of the Krupp armor. Congress will not hesitate, however, after our experience in the war, to pay whatever price is necesaary to get the very best of everything for our ships."

THE COST OF FUEL GAS.

BY E. P. REICHHELM.

Outside of the natural gas regions fuel gas is not so generally used for mechanical heating as that misconception should not exist respecting its value as fuel, and in daily experience we have frequently found that propositions which appear to be self-evident must be repeatedly and clearly explained to men who in their own special vocation are pre-eminent, but to whom this subject has been foreign up to the moment when gas heating has been brought to their special notice.

A recent experience with a manufacturer who has brought his own line of production up to the very highest standard is a case in point. He told me that he had "about concluded to put in a producer gas plant, as the gas could be made at a cost of only about 10 cents per thousand, and that at that rate he knew he could advantageously use it." I told him in reply that I knew of the production of producer gas at less than 10 cents and had seen it made and put into a holder at a cost only slightly exceeding 7 cents per thousand, but that I did not believe that for his particular work either 10 cent or 7 cent gas would be cheap. Asked for an explanation of this statement, I answered that the cost of 1,000 feet of gas means nothing unless the amount of heat obtainable from it is known. Since 140,000 heat units per 1,000 feet was a liberal estimate of the caloric efficiency of producer gas, the cost of 1,000 feet of such gas would have to be multiplied by five in order to get at its true cost as compared with city gas, which contains nearly 700,000 heat units per 1,000 cubic feet. Hence 7 cent producer gas would cost 35 cents as compared with illuminating gas, and 10 cent gas would cost 50 cents.

This, however, is not the whole story. Producer gas cannot be used in small space. It is bulky and will not readily mix wtih air, and its distribution is difficult because of the small proportion of air which can be injected into the heating chamber with it, so that while useful in large space, either with natural draft or under a very low air pressure, it cannot be made to work in gas blast furnaces, which are admittedly superior to all other heating devices for general manufacturing uses, except in very large furnaces used in rolling mills or iron and steel works, where furnaces are kept in continuous operation.

A previous article published in the *American Machinist* under the head of the "Relative Value of Different Fuels," (January 10, 1895), contained a tabulated statement of the heating value of different gases in common use, as also that of coal and crude oil, the substantial correctness of which has been verified by ample experience since then.

It omitted, however, to give a simple rule or formula by means of which any one not especially versed in gas matters could readily figure the true cost of different gases, and would not be liable to be deceived into believing a 7 cent or 10 cent gas cheap. The number of heat units contained in any gas is of course the measure of its efficiency. A certain number of heat units are supposed to be contained in each kind of gas now in common use, which have been ascertained by repeated analysis and common experience in daily practice, and taking the commonly accepted number of heat units contained in each gas as a basis, we have a means of comparing their heating qualities without much trouble.

Take 1,000,000 heat units as a result to be obtained, divide this number of heat units by the number contained in 1,000 feet of each kind of gas; then multiply the quotient by the price of the gas and you have the cost of 1,000,000 heat units in each case.

For instance, the ordinary illuminating or city gas contains 675,000 heat units per 1,000 feet and costs $1.15 in the city of New York.

The producer gas above referred to contains 140,000 heat units per 1,000 feet and in medium sized plants will cost 10 cents per thousand. Naphtha gas made by the American Oil Gas Machine contains two and a half gallons of naptha per thousand feet with 306,000 heat units, and at 6 cents per gallon for naphtha this gas would cost 15 cents per 1,000 feet, and proceeding according to the foregoing rule the tabulated statement presented herewith would result.

	H. U. Wanted.	H. U. in 1,000 feet.	Quotient.	Price per 1,000 feet.	Cost of 1,000,000 H. U.
City gas	1,000,000 ÷	675,000 =	1.48	$1.15	$1.60
Producer gas	1,000,000 ÷	140,000 =	7.1	.10	.71
Naphtha gas	1,000,000 ÷	306,000 =	3.2	.15	.48

The number of heat units in a gas is not, however, the only feature to be considered, but also the nature of the work to be done. As a general thing, gases rich in carbon must be preferred for fine metal work, and oil gas is undoubtedly the best for such work. Gas made from coal contains traces of sulphur or sulphuric acid, which produces scale by corrosion.

This is not noticeable in forgings, but in annealing or hardening almost all finished work will show it clearly. To anneal wire for the last draft a pure atmosphere in the oven surcharged with carbon is particularly desirable, and a pure hydrocarbon gas, even at a higher price, would pay better than any retorted gas.—[American Machinist.

British Iron Market Advancing.

Reports of the British iron market for the last week of September note continued improvement, with pig iron prices advanced over the preceding week. No. 3 foundry was 43s 6d, an advance from 43s; Middlesbrough warrants, 43s 3¼d against 42s 10¼d; Scotch warrants, Glasgow, 48s 8d, an advance from 48s 1d; and hematite warrants, West Coast, 54s 3d, as compared with 52s 11d in the preceding week. Engineering and shipbuilding firms were unusually active, with some complaint of lost time because material could not be had. Plate, structural and sheet mills in particular were crowded with work considerably more going on the books than was shipped out. S. W. Royse & Co., of Manchester, Eng., reviewing conditions in September say: "The improvement in the pig iron market, which we noted a month ago, continued during September. Prices advanced during the month some 1s 6d per ton at Glasgow, and about 8d per ton at Middlesbrough. The great heat has latterly interfered with production, and although shipments from Scotland are large the shipments from Middlesbrough are disappointing. The market has, however, quite a strong tone, and an early improvement is expected in shipments, and a further advance in values. In the Midland manufactured iron trade, a fair business has been passing at steady prices, and there is more disposition to place orders, in view of a possible advance in values."

THE petition presented to Judge Taft in United States Circuit Court at Cincinnati, last week, by the American Steel & Wire Co., asks for an injunction against the strikers in the Cleveland mills of the company. If allowed, it would tie the hands of the strikers so far as concerns interference with the company or any who may seek employment in the mills. Judge Taft ordered that the defendants should show cause why a preliminary injunction should not be issued. The hearing will be had on affidavits and will take place in the United States Circuit Court in Cleveland on Oct. 11.

CONSIDERABLE interesting information regarding black and galvanized sheets is given in a circular issued by E. H. Stroud & Co., 36 La Salle st., Chicago, and 100 Williams st., New York, who are sales agents for the Old Meadow Rolling Mill Co., the Ohio River Sheet & Tin Plate Co., and the Canton Rolling Mill Co. Attention is called to four grades which they offer: Finish A, extra smooth pickled and cold rolled; finish B, pickled and cold rolled; finish C, double pass cold rolled, and finish D, one pass cold rolled.

MR. G. WHITEFIELD CHANCE, in a article contributed to the *Engineering and Mining Journal*, points out some of the dangers in rail making due to the use of larger ingots, faster rolling mills and higher heats, in rolling, than formerly. He takes the ground that while high carbon with low phosphorus and sulphur and medium silicon and manganese will produce good rail steel, with proper heat and mechanical treatment, yet the rails of 20 years ago, made of small ingots in slow running mills, show better results than the present high carbon rails. This he believes is largely due to the small sections, yet the other influences, he points out, were no doubt factors in determining the good qualities.

Review of the Technical Press.

[Translation, Condensation and Comment expressly for The Iron Trade Review by Dr. Richard Moldenke.]

Chill Roll Progress.—*Tin and Terne*, Aug. 25, contains the complete article by "Fer Blanc," a part of which was reviewed in *The Iron Trade Review* of Sept. 22. The author gives a list of points to be studied in connection with chill roll work which, with some modifications, could also be extended to sand rolls, steel rolls, and in fact to very many classes of heavy castings. The general condition of the stresses in the rolls when cast, and those set up while in service, embrace among others the following considerations: The tensile strength of the iron in the chilled and in the gray portions of the roll, determined both at intervals along the radius of the roll as well as along its length. Similarly the modulus of elasticity determined in connection with each tensile test and the co efficient of expansion of the metal at that place. Then also the heating and cooling data of the chilled and gray portions of the roll with reference to the thermal condition of the billet to be rolled. "Fer Blanc" very properly concludes that with so many factors entering into the discussion, it will be difficult to properly value each one by merely observing the behavior of the roll. Not only are absolute and relative values wanted, but information leading to a possible variation in roll-making practice which will help to avoid excessive breakages and get the maximum of work out of the rolls themselves.

Action of Metalloids on Cast Iron. [*Proceedings of the Iron and Steel Institute*, Aug. 1898.]—Mr. Guy R. Johnson, of Embreville, Tenn., presented before the Institute at its recent meeting a paper which is intended to throw some light upon the question of the chemistry versus the physics of cast iron, as seen from the standpoint of the American foundryman. While only one brand of iron was experimented upon, yet the range is so remarkable that the results are well worthy of close study. The action of carbon is taken up first, as it affects the product most, and its condition being influenced to a very great extent by the various other elements present. Of the four forms supposed to be present the only two the foundryman deals with, so far as our present knowledge would indicate, are graphite and combined carbon. While the total amount of these two forms of carbon usually runs between 3 and 4 per cent, their relative proportion in a casting makes it either good or bad for the purpose intended. The higher the carbon, the weaker the iron; or, to turn this about, the addition of steel to lower the carbon gives a stronger casting than would be produced by the ordinary run of pig irons and scrap. Mr. Johnson compares a charcoal iron with a coke iron, claiming the greater strength of the former to be due to the lower total carbon and a higher proportion of its combined to graphitic carbon, in addition. This is undoubtedly true, but as many charcoal irons, especially those with low silicon, run up very much higher in carbon than the analyses given, a very interesting comparison of the relative strength of coke and charcoal irons of the same total and combined carbons would have been interesting and at the same time settled a much debated question. In a table giving a series of tests with irons varying in their carbons but constant in silicon, sulphur, and phosphorus, the effect of graphite from 3.72 down to 2.84, with the combined carbon running from 0.15 up to 0.92 at the same time, is strikingly shown by the resulting tensile strength. This runs from 17,500 lbs. per square inch up to 35,950, the former being a very open No. 1 foundry iron, while the latter is a very close gray forge. Manganese, not being a metalloid, seems to have been excluded from the tables given, but would have been of undoubted value in them, for any possible doubt as to the influence exerted by this metal on the given strength would have been taken care of. Silicon is taken up next and its influence in the foundry explained. Sulphur comes next, the only excuse for its presence in quantities above .05 is the desirability of great density and strength in the sense of a greater proportion of combined carbon. Table IV. shows this clearly. Attention is called to the effect of high sulphur cokes in spoiling good irons, and the desirability, as a consequence, of always knowing what your fuel contains in this respect. Phosphorus, Mr. Johnson states, has the tendency *per se* to convert graphite into combined carbon. The discussion of the paper brought out adverse criticism on this point, and indeed the example of a Thomas pig quoted is weak, for a pig with less than 1 per cent silicon, with 0.6 sulphur, manganese not being given, but doubtless present in some quantity, would be white and brittle even if it did not run 2 per cent and over in phosphorus. The reviewer, however, agrees with Mr. Johnson regarding the action of phosphorus on the carbons and recalls the experiments of Mr. West with additions of phosphorus to melted iron. The effect produced was invariably an increase in combined carbon, and this in no way attributable to the casting temperature, for the metal thus treated was poured colder if anything than the companion pieces of the original iron. High phosphorus irons are valuable in light and thin castings, also for pipe, as they retain their fluidity longer and better. The question of strength however, makes it desirable to keep the upper limit below 0.5 per cent. Manganese is next discussed, its tendency to promote the formation of combined carbon not only, but to allow the iron to take up considerable quantities of carbon, is noted. Manganese and sulphur combine readily in the cupola, and hence where high sulphur irons must be handled a fair amount of manganese is desirable, otherwise the usual run of .50 to .75 is preferable. Mr. Johnson sums up as follows: For ordinary soft gray castings, use graphitic irons, that is, high silicon, manganese and sulphur should be kept down and phosphorus should run 0.75 to 1 per cent. Strong machinery castings require silicon .8 to 1.5, sulphur 0.3 to .05 and phosphorus 0.35 to .50. Hydraulic cylinders can stand more sulphur, while chilled wheels should have lower silicon and be very low in sulphur, but with 1 per cent manganese. The peculiar behavior of phosphorus in chill work is next noted, test bars are touched upon, and in conclusion all buyers of iron are urged to call for analyses, with a view of avoiding the pitfalls of judging by fractures only. A series of 17 tables are appended which will repay careful study. The discussion of this paper was opened by Prof. Howe, who has spent the summer on the other side. He explained his method of testing the hardness of irons by scratching them with a diamond. He has made the tests for Mr. Johnson's paper on the high manganese irons quoted. Mr. Snelus approved of the desirability of keeping down the sulphur in the coke, giving several instances of proposed changes in practice which failed in consequence of a contamination of the iron by the sulphur in the coke. Professor Arnold and Mr. Windsor Richards questioned the effect of phosphorus upon the carbons as stated in the paper. Mr. Harbord referred to the desirability of knowing more about the state of the carbons, and Mr. Hunt and Mr. Sandberg discussed the question of cast iron in car wheels.

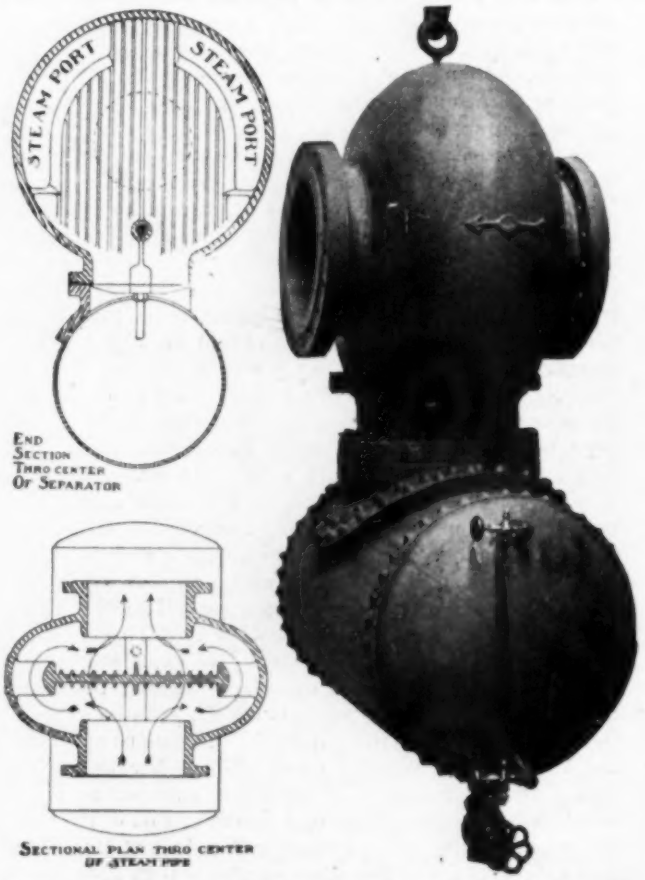
Contracts for the Birmingham Steel Plant.

Several important contracts have just been let for the open-hearth steel plant of the Alabama Steel & Shipbuilding Co., at Ensley, Ala. The iron work for the 10 50-ton furnaces of the Wellman rolling type goes to the Riter-Conley Co., of Pittsburg. The extreme width of these furnaces is 21 feet, the length 37½ feet and the height above foundations, 22 feet. The total tonnage of steel works is 2,000, including 400 tons of steel castings. The Riter-Conley Co. also has the contract for the gas producer house and storage bins, 18 feet by 343 feet, of steel construction. The 44-inch reversing blooming mill, which more nearly fills the English designation of a cogging mill than any other in this country, will be built by the Frank-Kneeland Machine Co., of Pittsburg. This mill will roll 36-inch slabs from the 18 x 20-inch ingot or it can be employed for rolling 4 x 4-inch billets. This latter service will be performed regularly, however, by the roughing train of the finishing mill when it is erected, later on. The mill engines will be furnished by the E. P. Allis Co. Engines for driving the electrical equipment have not been contracted for as yet. Boilers will be furnished by the Cahall Sales Department, there being 5,000 h. p. of Cahall vertical boilers in all. The contract to be executed immediately includes 3,000 h. p. of these, in units of 300 h. p. A 225 k. w. generator has been awarded to the Westinghouse Electric & Mfg. Co. Another of 400 k. w. will be let later. It is expected that the electrical equipment of the plant will be especially complete and effective.

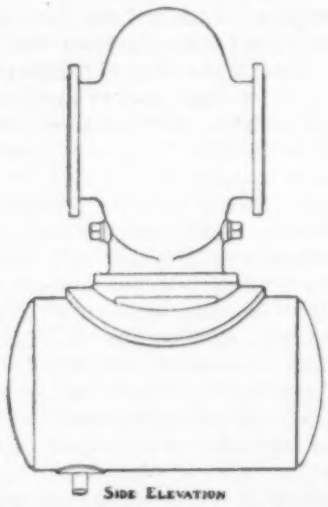
A SPECIAL HORIZONTAL SEPARATOR.

The illustrations herewith are of a special 18-inch horizontal high pressure Cochrane separator, built for the Cambria Iron Works, Johnstown, Pa., by the Harrison Safety Boiler Works, of Philadelphia. The space between the main steam pipe and the floor being limited, the well or receiver of the separator was turned at right angles, giving the desired capacity without increasing the depth.

The specifications calling for a separator adapted for an exceptionally high working pressure (250 pounds per square



inch), a large factor of safety was adopted and the metals proportioned accordingly. The thickness of the metal in the shell forming the head of the separator was made 1¼ inches, with flanges 2½ inches thick. The well, which was 30 inches in diameter by 4 feet 9 inches long over heads, was made of flanged steel 7-16-inch thick, with horizontal joint lapped and



triple riveted. The heads were 9-16-inch thick, dished to a 30-inch spherical radius. A 2½ inch reinforced tapped opening was provided for the drip; the cast iron saddle was double riveted to the shell, and the latter suitably bolted to the head proper.

In the use of an oblate spheroidal shape, exceptional strength was given, with special protection, at the juncture of the lower branch with the head on the short axis, from expansion and contraction strains, by means of a stay tube cast in and with the head. Through this stay tube is passed a 1 5-16-inch bolt fitted at each end with a close ended nut. The greatest diameter across the head is 4 feet. Distance from the bottom of the well to the top of the head, 7 feet. Weight, 5,400 lbs. The completed separator was hydraulically tested under a pressure of 400 lbs. per square inch.

THE TIN PLATE MARKET.

The situation in tin plates is very quiet with little business doing for delivery before Jan. 1. Buyers and sellers are awaiting the action of the committee negotiating the trust deal; but little information has been given out further than he general statement that everything is moving along well and that the consolidation will soon be an assured fact.

The committee which has been working on the financial proposition involved is said to be nearly ready to report a plan to purchase the stock of enough companies to make the consolidation operative. Richard Quay, W. T. Graham and D. G. Reid are members of the company. It would appear that the rapid increase in production, as shown by the latest statistics, and the apparent impossibility of raising prices in the face of a great and increasing producing capacity, has been making sentiment in favor of combination as the only way out. It is reported that the capitalization of the new company will be $40,000,000 and that the requirement in cash will be $15,000,000.

The market is weak for October to March, with few sellers beyond March 31. April to September plates now bring about 5c premium over earlier deliveries. We quote Oct.-March, 100-lb. cokes at $2 60 to $2.65 f. o. b. mill.

Tin Plate Production January - June, 1898.

The Treasury Department statistics of tin plate production in the United States ceased with the fiscal year ending June 30, 1897. The *Metal Worker*, early in the year, collected the figures for the six months ending Dec. 31, 1897, and has just published the statistics for the first half of 1898. Out of 41 separate works operating in the first half of the year, reports were received from 39, and the two plants of the National Tin Plate Co. were estimated. The total was 414,115,439 pounds of black plates and 359,468,301 pounds of tin and terne plates, much the largest half year's output in the history of the industry. The figures from the beginning are given as follows:

BLACK PLATE FOR TINNING.

Period from—	Pounds.
July 1 to December 31, 1891 (half year),	8,778,113
January 1 to December 31, 1892,	40,478,816
January 1 to December 31, 1893,	71,673,146
January 1 to December 31, 1894,	125,795,171
January 1 to December 31, 1895,	278,223,707
January 1 to December 31, 1896,	366,180,809
January 1 to December 31, 1897,	601,890,476
January 1 to June 30, 1898 (half year),	414,115,439
Total product for seven years,	1,907,135,677

TIN AND TERNE PLATES.

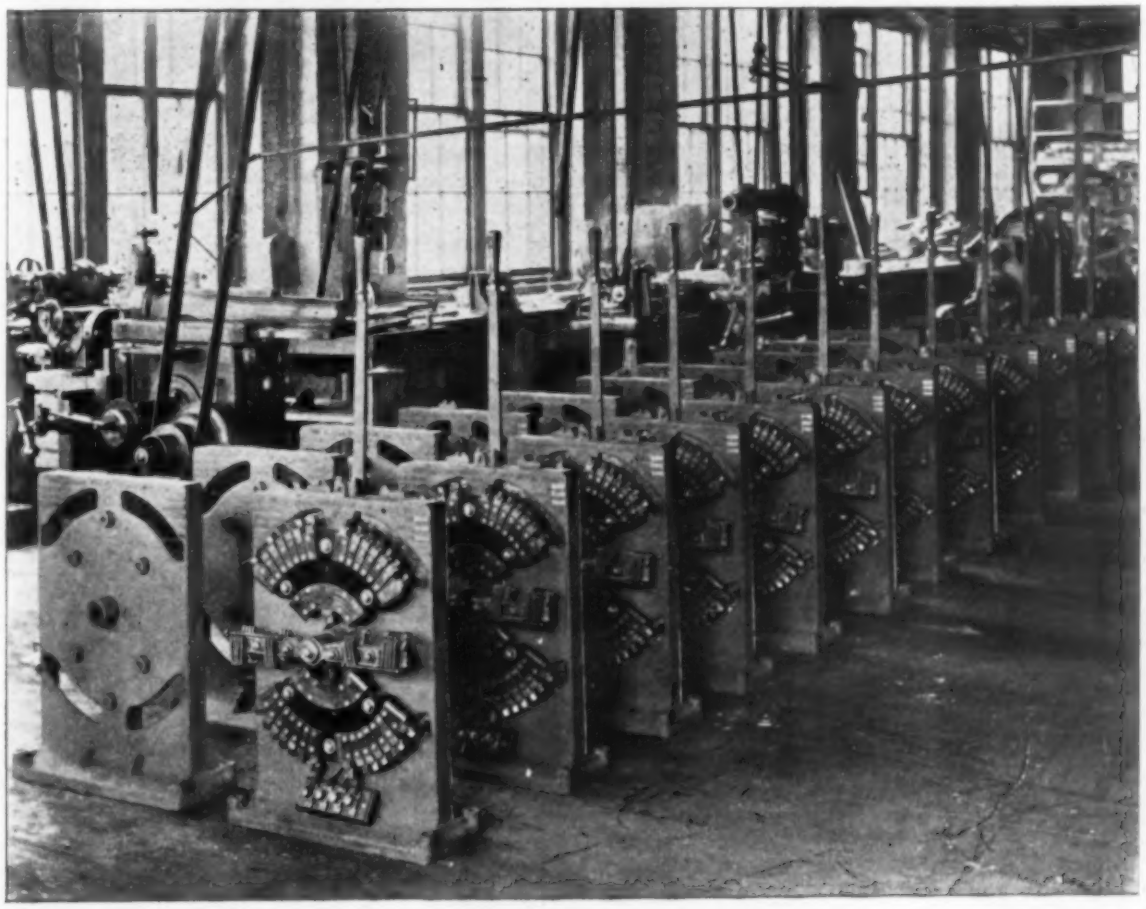
Period from—	Pounds.
July 1 to December 31, 1891 (half year),	2,236,743
January 1 to December 31, 1892,	42,119,192
January 1 to December 31, 1893,	123,606,707
January 1 to December 31, 1894,	166,343,409
January 1 to December 31, 1895,	225,004,869
January 1 to December 31, 1896,	369,229,796
January 1 to December 31, 1897,	574,759,628
January 1 to June 30, 1898 (half year)	359,468,301
Total product for seven years,	1,862,768,645

From the above it will be seen that the past six months' output is enormously ahead of that of any previous half year. As compared with the first half of 1897, the gain in the production of black plates is 171,485,450 pounds, and that in tin plate 106,894,400 pounds. Taking the 12 months ending June 30, 1898, and comparing them with the 12 months ended June 30, 1897, the increase is striking, being no less than 326,916,890 pounds in black plate and 234,691,965 pounds in tin plate, equal to 3,027,008 and 2,173,073 boxes respectively.

THE DINKEY CONTROLLER.

The Electric Controller & Supply Co., Michigan st., Cleveland, consists of W. W. Adams and Harold McGeorge, Cleveland young men, who started business about a year ago and are making a specialty of electrical controllers for crane and mill purposes. A great deal of trouble has been experienced in getting a thoroughly made, compact and efficient controller for crane and mill work. A. C. Dinkey, chief electrician of the Carnegie Steel Co , Ltd., invented a controller which is in general use at all of the Carnegie Co.'s works. The Electric Controller & Supply Co. has secured the right to build these controllers, and with some improvements it has made, and by laying stress on good workmanship, has succeeded in bringing out a controller that has found ready favor.

The illustration shows the company's shop with controllers complete and in process of erection. The controller is designed especially with a view to compactness, all the resistance being placed directly back of the contacts, in the hollow casing, as shown in the cut. The capacity of the plant has been increased several times since the company started and



THE DINKEY CONTROLLER.

it now has a very complete shop for controller work, with all special tools and appliances. The Electric Controller & Supply Co. is making all the electrical work required by the Wellman-Seaver Engineering Co., except motors, and is also doing a large amount of work for the Brown Hoisting & Conveying Machine Co. and for other crane and tool builders.

THE Wellman-Seaver Engineering Co , of Cleveland, received in September orders for five charging machines to go abroad. One is for Lieut. Col. L. Cubillo, of the Trubia Arsenal, Trubia, Spain; two for the Park Gates Iron & Steel Co., of Rotherham, Eng.; one for Vickers Sons & Maxin, Ltd., Sheffield, Eng., and one for the Societe des Acieries de Alexandrovsky, St. Petersburg, Russia.

IT is reported that the Victorian and South Australian governments will invite tenders for railway material this month and that the material, including rails and girder work, is intended for relaying the government lines and the development of agricultural districts.

ALABAMA MINERAL PRODUCTION.

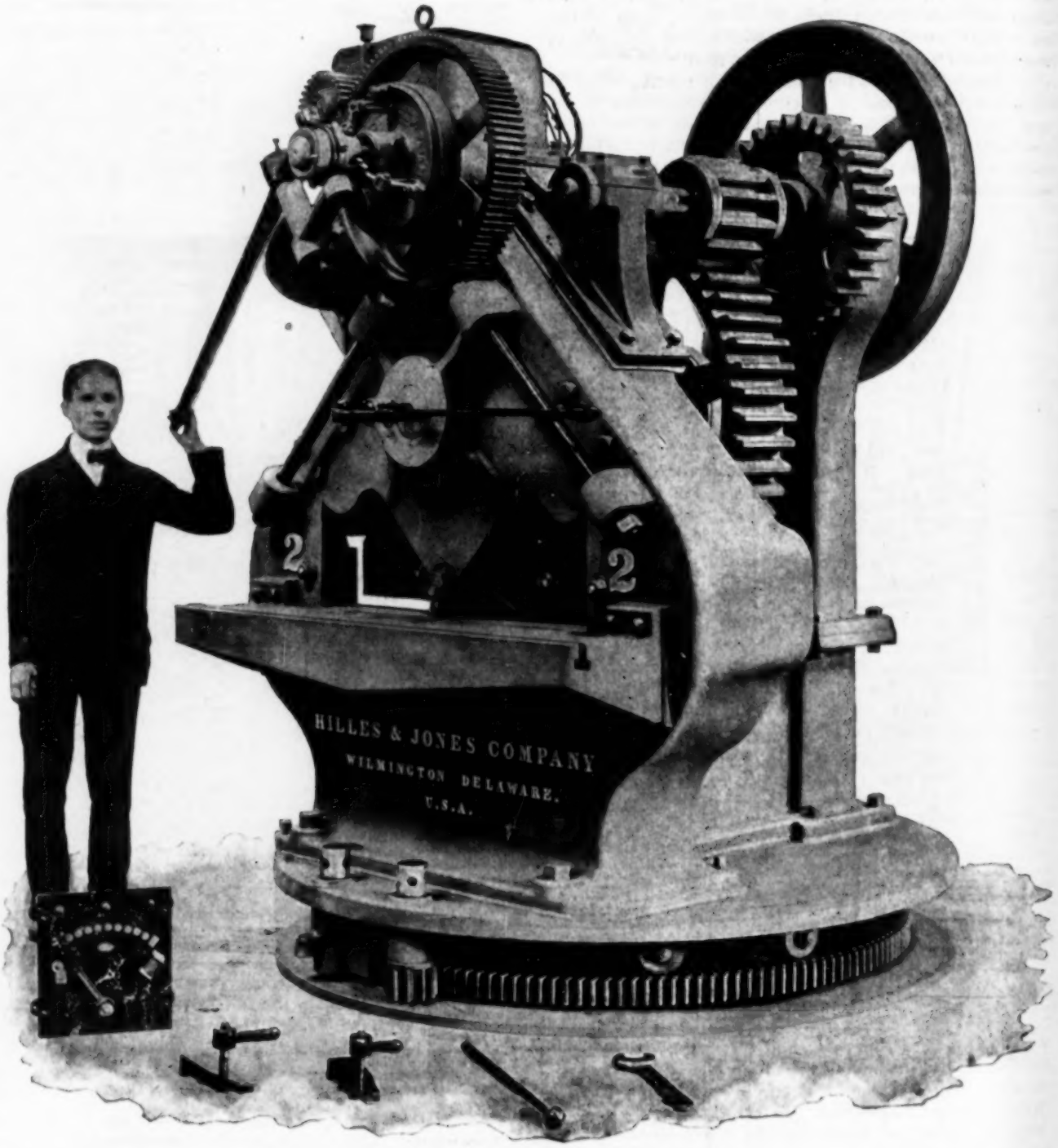
The following is the production of minerals in Alabama during the months of June and July, 1898:

	June.		July, 1898.
Coal reported	476,375	short tons.	390,922
Coal estimated	20,000	"	50,000
Total	496,375	"	440,922
Coke reported	87,531	"	74,336
Coke estimated	12,000	"	22,000
Total	99,531	"	96,336
Pig iron reported	74,209	long tons.	78,735
Pig iron estimated	9,500	"	5,000
Total	83,799	"	83,735
Brown iron ore reported	39,985	"	38,872
Brown iron ore estimated	5 000	"	6,000
Total	44,985	"	44,672
Hard red ore reported	112,287	"	78,804
Hard red ore estimated	13,000	"	12,000
Total	125,287	"	90,804
Soft red ore reported	20,339	"	16,436
Limestone reported	27,964	long tons.	19,929
Dolomite reported	9,081	"	7,685
Total stone for flux	37.045	"	27,614
Bauxite reported	1,202	"	1,319
Lime reported	2,571	Barrels.	2,600
Lime estimated	500	"	1,100
Total	3,071		3,700
No. employes	5,958		5,642

THE Snow Steam Pump Co., of Buffalo, has taken the contract from the Cramps for the pumps for two battle-ships and a cruiser about to be built at Philadelphia—one battle-ship and the cruiser for the Russian Government, and the other battleship for the United States Government. A battleship's pump equipment includes: Main boiler feed pump, auxiliary feed pump, fire pump, bilge pump, general water-service pump, sanitary pump, distilling apparatus and hot well pump. The Buffalo company is also building three 6,000,000-gallon pumping engines for the Ohio Steel Co. of Yougstown, O.

DOUBLE ANGLE SHEAR ELECTRICALLY DRIVEN.

A new design of double angle shear, driven by electricity, has been brought out by the Hilles & Jones Co., Wilmington, Del. The machine illustrated is capable of cutting off 6-inch by 6-inch by ½-inch angles without disturbing the part cut off. Both larger and smaller sizes are manufactured. An angle can be sheared to a bevel considerably beyond 45 degrees, this having been especially provided for in the shape of the main frame. Sliding heads are both of cast steel which have been found to stand up better under the wear than cast iron; and the top and bottom knives are both of rectangular section with four cutting edges. The outboard bearings are supported in a heavy box-form stand which is securely bolted to the main frame so that the machine is complete on one foundation. The motor is mounted on a substantial bracket secured to the main frame and drives on to the fly wheel through a pair of cut gears and a friction clutch. This allows the motor to be stared up at full speed before throwing in the fly wheel, thus avoiding the possibility of damage from careless throwing on of the current by inexperienced workmen. Another feature of this friction is that it makes a slipping point between the motor and the knives. The turn-table avoids the necessity for swinging awkward lengths around in front of the knives, and the whole machine is convenient in every particular, in addition to its substantial construction.



DOUBLE ANGLE SHEAR, ELECTRICALLY DRIVEN.

THE New York *Press* of Sept. 26 has seven columns of good times news. Some of it is in generalizations and in other portions the enthusiasm of correspondents has rather free rein; but for the most part it bears the stamp of genuineness. There is agreement by all the manufacturers, bankers and others interviewed in the proposition that the output of most of the industries of the country is now unprecedented. From Chicago, Birmingham, Wheeling, Indianapolis, Cleveland, Springfield, O. and Mass., Rochester, Lynn, Pittsburg, Louisville, Ky., Waterbury, Conn., Worcester, Mass. and other busy centers, telegrams are printed containing specific evidence of unwonted activity.

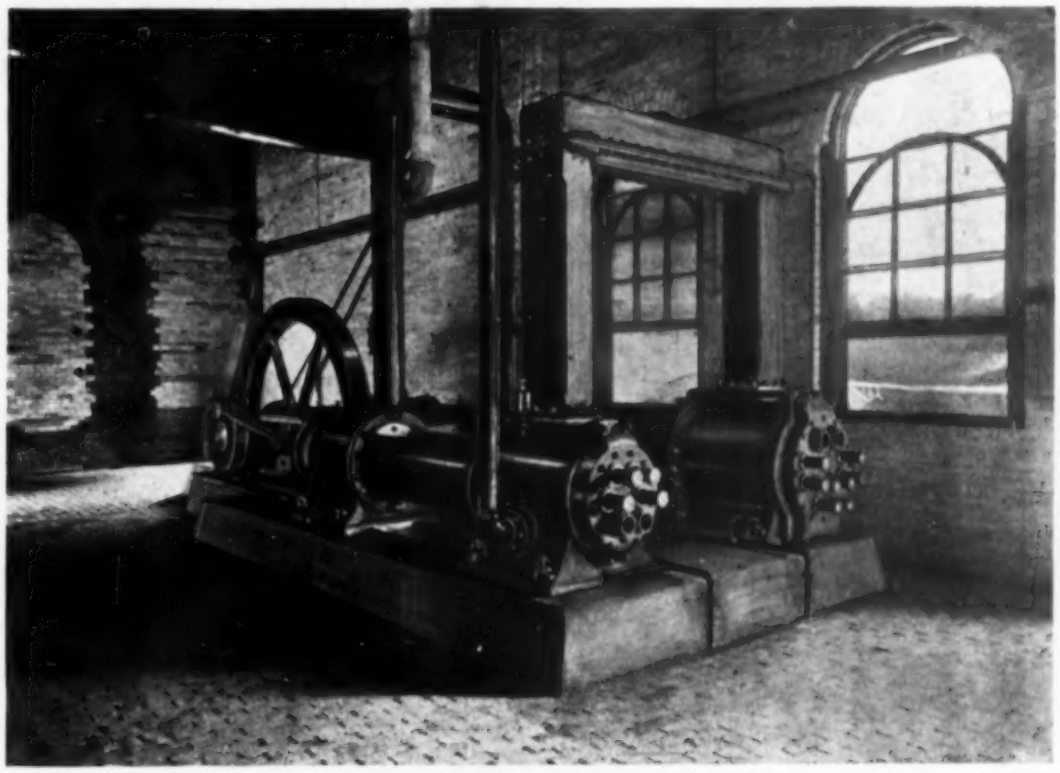
THE German government has just issued patents to Mr. Ellwood Ivins, president of the Ellwood Ivins Tube Co., of Oak Lane Station, Philadelphia, on tapered gauged tubing. Mr. Ivns now has a chain of patents on tapered gauged tubing in all the principal countries of the world.

VARIED SERVICE OF A RAND COMPRESSOR.

The Rand Drill Co., 100 Broadway, New York, and Monadnock Block, Chicago, through its Western office, has recently installed an air compressor in the shops of the Columbus, Hocking Valley & Toledo Ry., at Columbus, O., similar to the one shown in the accompanying cut. The machine is used by the railroad for a variety of purposes. It operates pneumatic tools of nearly every variety in the iron and wood-working shops and the boiler shops; is used for pumping water and running air hoists; operating forming tools in the blacksmith shop in the place of a bulldozer; welding flues; painting and whitewashing; furnishes air which is used in place of steam in blowing out engines; operating an aerated fuel system in place of wood for starting fires, running pipe-bending machines; elevating sand; running copying presses in the office—and for several other purposes.

The machine is a cross compound steam and air compressor, with high pressure steam cylinder 10 inches in diameter and low pressure steam cylinder 16 inches in diameter. The high pressure air cylinder is 10 inches and low pressure 16 inches by 16-inch stroke. It is provided with the latest improved inter-cooler, and has a capacity of 500 cubic feet of air per minute, compressing to 100 lbs. pressure.

The machine was purchased by M. S. Connors, general superintendent, and F. S. Stiffey, master mechanic of the railroad after a careful examination of a similar machine installed by the Rand Drill Co. at the Globe Iron Works, Cleveland. It has given excellent satisfaction.



RAND AIR COMPRESSOR.

Cambria Steel Co.

A circular issued by the directors of the Cambria Iron Co. to the stockholders calls a meeting for Oct. 26 to vote on the lease of the property to the Cambria Steel Co. at a guarantee of 4 per cent per annum on the stock. An underwriting syndicate has agreed to take the entire share capital of the company. The circular says:

"It is proper to make known to you the reasons which have induced your board to unanimously recommend the making of this lease. The growth of the business of your company requires for its proper conduct and development an expenditure annually of upward of $1,000,000 upon capital account for new properties, the purchase of equipment and other improvements. Your board feels that this expenditure cannot be successfully met from the present resources of your company." The proposition, which has been reported before, is to lease the property to the Cambria Steel Co., which shall have $16,000,000 capital, and if the lease is made the board "will be justified in declaring a scrip dividend in scrip convertible into stock of the Cambria Iron Co. prior to March 1, 1899, so that it will participate in the guaranteed dividend of April 1, 1899." The Cambria Iron stockholders will have the privilege of purchasing from the corporation of the Cambria Steel Co. two shares of the steel company for each share of the Cambria Iron Co. "upon payment of the first installment of $1.50 per share, to be called about Dec. 1, 1898. A second installment of $1.50 per share will be payable June 1, 1899. It is believed that additional calls will be made during possibly five years, not to exceed $3 per share per annum, which will be payable $1.50 per share semi-annually, and that all moneys so paid in will be applied to expenditures which are properly chargeable to capital account."

THE Schoen Pressed Steel Co., of Pittsburg, has received recently many inquiries from foreign countries concerning the steel cars it has been building for railroads and manufacturing companies in this country. One inquiry was for specifications for steel cars for the Trans-Siberian railway. Japan, China, Brazil, Argentine, Chile, Australia and South Africa are also represented in the inquiries. In some cases it was desired to know whether the cars were adapted to narrow-gauge mining roads, where the hard ore has been found to cut wooden cars to pieces. The company has not had opportunity to bring out designs for such service as yet.

A. H. NILSON, formerly president of the Automatic Machine Co., of Bridgeport, Conn., is now president of the A. H. Nilson Machine Co. and doing business at the old home of the Automatic Co., 300 Railroad ave., Bridgeport. The Nilson Co. makes a specialty of automatic machinery for wire and wire products.

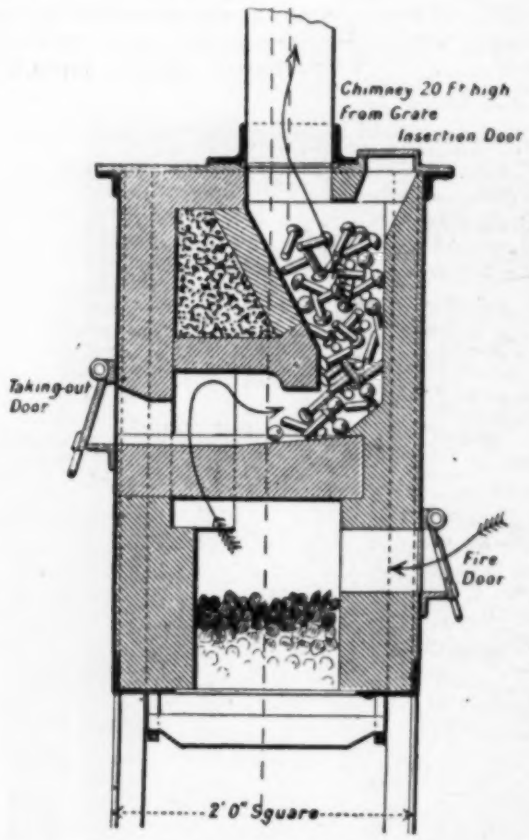
FOLLOWING the practice of certain plate mills, the Detroit Dry Dock Co. at its Wyandotte yards, now uses magnets for handling plates. Two magnets, one at each end of a plate, are employed, and thus upheld the plates will be conveyed by means of a crane.

IN view of the status of the iron trade, the Central Freight Association has asked that the special iron lists be continued until Dec. 31, and the concurrence of the Joint Traffic Association has been secured.

A NEW RIVET FURNACE.

The accompanying cut which, with the description, we take from the *Engineer*, illustrates a new rivet furnace constructed by Messrs. Ross & Gibson, of 68 Cheapside, London. The furnace has a fireplace below, communicating by means of ports with a combustion chamber, into which opens a hopper surmounted by a chimney. The hopper is filled with rivets through the door at the top, and when hot they are withdrawn through the combustion chamber by the upper door in the side. Thus the flame on its way to the chimney is drawn by the draught through a column of rivets 9 inches or 10 inches high, and while those at the bottom of the hopper are ready for use, those at the top—if the supply of rivets be kept up—will always be nearly cold.

The heat is taken up by the rivets very rapidly, and each rivet is constantly moving down by gravity into a hotter part, till it is taken out ready for use at the bottom. This system of progressive heating results in great economy and speed of



working the furnace, although only two feet square by five feet high, being capable of heating 3,000 ¾-inch rivets in nine hours, with a consumption of 2 cwt. of coal, as against 6 cwt. to 10 cwt. burnt by ordinary furnaces.

Air is admitted through a regulator in the fire-door to insure perfect combustion of the gases before they reach the rivets, and plenty of room is given in the combustion chamber for thorough mixture of the air with the gases. If properly worked the furnace makes no smoke. When rivets of different lengths are wanted they are put in the hopper in layers, and preserve their relative order in their descent through the hopper. Special rivets may be put into the combustion chamber through the extraction door. The furnace can be easily moved from place to place.

THE Gates Iron Works, of Chicago, are very busy in all departments. They sold the largest number of their rock and ore crushers in August ever disposed of in a similar period. Among the foreign contracts is one for a 1,000-barrel cement plant in England, a sampling mill in Birmingham, Eng., a rock-crushing plant for Norway, a gold-concentrating plant for Chili, and a ballast-crushing plant for Germany.

THE Fernwood Lumber Co., Fernwood, Mass., wants 36-inch drill press, back gear power feed; 26-inch by 16-foot lathe; 22-inch by 22-inch by 6 foot planer; bolt cutter for bolts one quarter to one and a half inch.

AMERICAN IRON PRODUCTS ABROAD.

The London *Chronicle* has the following report of an interview with a well known American engineer, on some of the lines in which exports from the United States have increased in the past year or two and the reasons for this expansion:

Mr. S. T. Wellman, of Cleveland, O., who has just returned from the meeting of the Iron and Steel Institute held in Sweden, spent several weeks among British manufacturers. "My visit to England," he said on being interviewed, "has been for study and recreation quite as much as anything else, but I have been endeavoring to put into the hands of English steel and iron manufacturers machinery such as would enable them to produce these articles as cheap, if not cheaper, than we are doing in America. This may not seem a very patriotic thing for an American to undertake, but it is at least unselfish, is it not? It is an interesting fact that is just beginning to dawn on many Englishmen, that American steel and iron products are obtaining a startling hold as against British-made goods right here in Great Britain. I know within a very few days, for instance, of no less than 5,000 tons of American steel being sent to Harland & Wolff. Not long ago the city of Glasgow offered contracts for a large quantity of iron water-pipes. The lowest three bidders were all Americans. It chanced that there was a technical flaw in the bids which gave the astonished Scots a chance to readvertise, and again the lowest bidder was an American, and though the pipes were of special lengths not often used in the States, the American won the contract. I have just received from America the newly compiled figures on American steel and iron exports, and I can tell you that in spite of the war, in spite of the Dingley tariff, the American exports have reached the highest values in their history, and that prominent among them all are manufactured goods.

"I account for it largely by the fact of our improved manufacturing machinery, which machinery England is, singularly enough, deprived of by the fact that the labor unions will not permit the employer to avail himself of them. In other words, I manufacture an automatic machinery-making appliance. One American workman is able, and does operate, six of these machines. The English labor union compels the manufacturer to put a man on each machine, which naturally enough shuts him off from competing with the Americans. The result you can readily appreciate when I tell you that for ten years American exports to Europe have gradually increased, until they have wiped out the import side of the ledger and left us a handsome balance. The United States sold $30,000,000 of iron and steel products to European consumers, while in 1880 we exported only $12,000,000 and imported over $71,000,000. The exports of American steel rails advanced from $2,482,208 in 1897 to $4,63,376 for the fiscal year ending June 30, 1898. In ten years our exports of locomotives increased in value from $500,000 to $4,000,000 a year, and we are now sending locomotives to Egypt and Japan."

"EVOLUTION of the Modern Engine Shaft" is the title of a pamphlet in which is reprinted the articles by H. F. J. Porter, M. E., which appeared in *Power* not long ago. The illustrations show how the great steel forgings from which shafting is made are handled at the works of the Bethlehem Iron Co., from the pouring of the ingot to the final manipulation of the finished hollow shaft. Data are given, some of which we have printed in connection with a report of one of Mr. Porter's lectures on this subject, showing the relative strength of specimens taken from different parts of an ingot; the strength of annealed steel of various carbons as compared with oil-tempered steel of the same carbons, and the average physical qualities which forgings made of various grades of steel would show.

A very large engine shaft is being constructed by the Bethlehem Iron Co., of South Bethlehem, Pa., for the Corliss Steam Engine Co., of Providence, R. I. This shaft will be 27 feet 10 inches long, with a maximum diameter of 37 inches a bearing diameter of 34 inches, and a diameter of 32 inches, where the crank-disks fit on. Throughout its length is a 17½-inch hole. It is estimated that the finished shaft will weigh about 63,000 lbs. The specifications call for an elastic limit not less than 50,000 lbs. per square inch, and an elongation of 18 per cent in a round test piece 1 x 10 inches.

THE MACHINERY OUTLOOK.

Three replies have been received to our inquiries concerning the machinery trade, in addition to the letters published in the past two weeks:

Clayton Air Compressor Works, New York.

As manufacturers of a special line of machinery, our opinions as to the general state of trade, past, present and future, may not prove as valuable as if we manufactured a staple article of machinery, such as steam engines or water pumps, for which the demand is uniformly regulated by the state of general trade. The rapidly widening field of usefulness for compressed air appliances has resulted in the development of air compressor trade not in direct accord with general commercial activity. For this reason our trade is now, and has been for the past few years, in excess of any previous period of our existence, and at present writing we have more orders in hand than ever before. As to export business, we would say that pneumatic machinery is exciting widespread interest abroad, and the great superiority of American compressors and compressed air appliances assures to this country almost a monopoly in these lines.

Kilby Manufacturing Co., Cleveland.

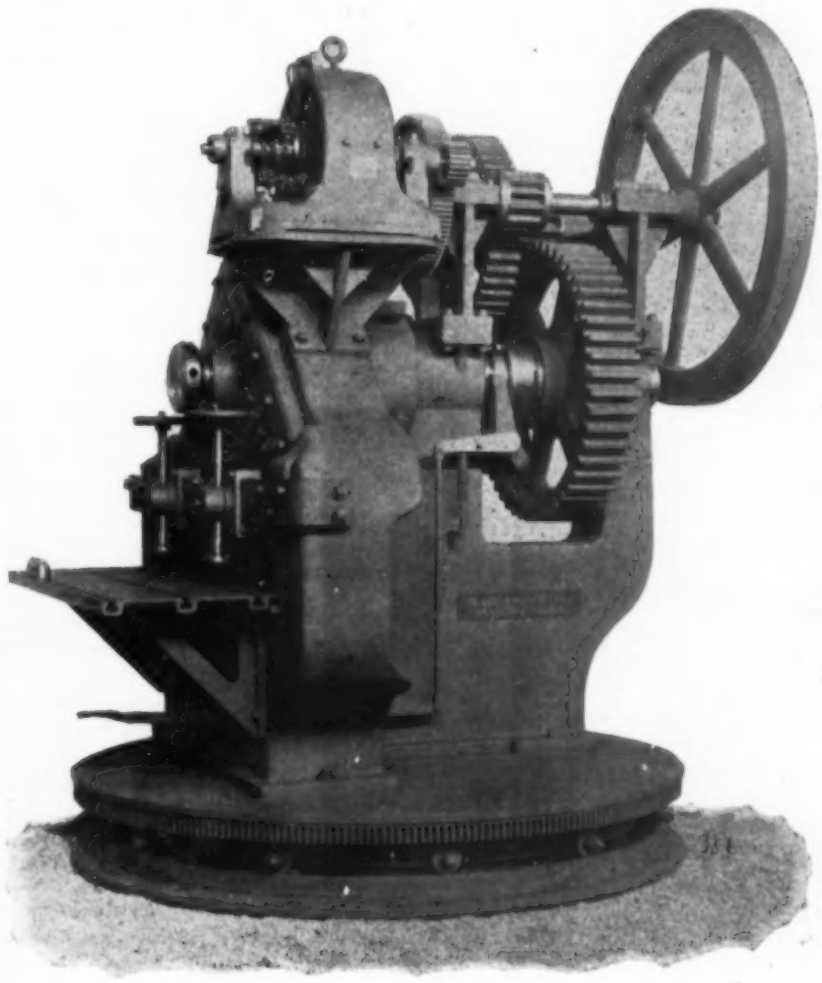
Our business being the manufacturing of beet sugar machinery, we are not brought in touch with the general machinery trade, and hence, cannot give any reliable information about it. From what we hear, we think the trade in general machine tools is much better than for many years past. If the newspaper reports during the past two or three years approximate the truth, there must be, in the near future, a very large demand for sugar machinery, engines, boilers, pumps, etc., from Cuba, to replace property destroyed by the insurgents. Porto Rico will also probably open a large market for American manufactures.

Reading Crane & Hoist Works, Reading, Pa.

The machinery trade appears to be in a very satisfactory condition. In our line we have had a steadily increasing business during the past four years and have not felt the recent war at all. As to your second and third questions, we cannot say much, not being interested in foreign trade. We have filled some orders for Japan and South American trade but do not go out of our way to hunt it up. Many improvements are needed in hand hoisting machinery. The rapid progress of electrical and air motors has relegated this branch to the background, and any works bringing out new designs and adaptions are sure of a steady and growing domestic demand for such devices.

SWIVELING ANGLE IRON SHEAR.

In cutting up angle iron for structural purposes it is often necessary to cut it at a miter or other angle. The new machine shown in the accompanying half-tone has been designed by the Long & Allstatter Co., of Hamilton, O., to make these miter cuts as readily as square ones. As will be seen, the table in front of the shear blades is provided with adjustable gauges, for determining the angle to be cut. One leg of the angle shear blades is vertical and the other horizontal—the iron being cut thus lying with one leg flat on the table against the gauge at one point and against the shear blade at another, while a swiveling adjustable clamping screw enters the angle and holds it securely in position, crowding it both against the stops and against the work table.



SWIVELING ANGLE IRON SHEAR.

With a stationary machine the adjustment for different angles of cut would necessitate a large fan-shaped space in front of the machine, which would consume valuable space, and involve extra handling of the stock. To avoid this the entire machine is mounted upon a turntable, and by a pinion and crank on the side opposite to the one shown the machine may be so turned that the stock shall occupy the same position regardless of the angle at which it is being cut. A pilot wheel, seen in front, operates the cam shaft by hand in setting the shear blades, while an automatic stop insures that the machine shall always come to rest with the shears open. The machine is adapted to cutting both right and left hand, and is made in seven sizes covering to the full range of sizes of angle irons. The motive power shown is an electric motor, now so popular in structural iron works, but a steam engine is supplied when preferred.

TROPENAS PROCESS FOR STEEL CASTINGS.

The fact that steps are being taken for the introduction of the Tropenas steel process at several points in the country, in addition to the plant at Derby, Conn., lends interest to the full report of the discussion of this subject at the Cincinnati meeting of the American Foundrymen's Association. The paper read by Mr. Tropenas, describing the process, with its features of surface blowing, comparativly small bodies of metal, and its adaptability to steel castings, has already appeared in these columns. The discussion follows:

Mr. Gates: I think every foundryman realizes that steel is going to take a larger place in the manufacture of machinery and work of that class, and it seems to me that any effort that is made in that direction of a converter which will allow of its being introduced into the foundry is a good step and we should encourage it.

Dr. Moldenke: What is the percentage of loss in the metal?

Mr. Tropenas: It is from 4 to 6½ per cent at the cupola, according to the composition of the pig iron used. We have, of course, a loss in the converter, and it varies more or less with the percentage of silicon and other elements contained in the iron. Our experience has shown that a loss in the converter and cupola together varies from 14 to 17 per cent, according to the kind of pig iron used and kind of steel manufactured. These data are not the result of one or two blows, but of thousands of blows. If hard steel is to be made from a specified iron, that is to say, if you stop the blow before all the carbon has been removed, you will have less loss than if you make a soft steel. We have had very little experience yet with the process in the United States. We started last week and made two charges of a hard grade of steel for government purposes. We took a few test pieces from the first blow, and they showed that the tensile strength was, in one case, 103,000 lbs. with an elongation of 16 per cent. and in the second case was 107,000 lbs., with an elongation of 9 per cent. These, of course, not having made any selection of iron, constitute a very good test. In Europe we are making a lot of castings for government purposes, and in every case the pieces, or a great many of them, have to be tested by test pieces cut off the casting, and they turn out very satisfactory.

Mr. Bailey: What is the loss in charging the cupola, from the metal to the converter?

Mr. Tropenas: About 14 per cent to 17 per cent.

Mr. Bailey: Do you put all the scrap in the cupola?

Mr. Tropenas: Yes, we melt it all.

Mr. Bailey: What percentage of loss do you reckon on in making a steel casting?

Mr. Tropenas: The proportion of scrap, such as risers, gates, etc., depends on the class of castings to be made. Generally speaking, for ordinary work an average of 25 per cent is practically correct.

Mr. Bailey: Is it expensive to melt scrap in the cupola?

Mr. Tropenas: No, it is not. Of course, the scrap is harder to melt than the iron, but you get some carbon from the coke in the cupola and it allows you to get the necessary heat.

Dr. Moldenke: When you blow down to the end of the operation is there not a danger of oxidization?

Mr. Tropenas: Yes. But the precautions to be taken to avoid this are very simple. We have very little gas, owing to the blowing above the surface. The steel is perfectly free from gases, and it would strike you to see how we pour into the mold. We treat it in the same way as one would for cast iron. Two or three men go to the converter, tap it, and go about the foundry pouring the charge, and come back with a little steel possibly remaining in the ladle, but they run a little more metal on top of it, just as with ordinary cast iron. We can make a vast number of our small castings in green sand.

President Schumann: Is this method at all applicable to foundry purposes?

Mr. Tropenas: Yes, for steel founders.

Mr. Schumann: I mean for ordinary foundry castings of gray iron?

Mr. Tropenas: In some cases we have made castings which I could hardly call steel castings or iron castings, they were between the two.

Mr. Schumann: I mention that because all thoughtful foundrymen realize the fact that we eventually must produce a steel rather than an iron casting. There is no reason why we should continue in cast iron when we can get a machinery metal easily machined and with more ductility. Remarks have been made years ago that it should be expected within a reasonable time that our product from the cupola would be entirely different from what it is to-day. And if the method or process of Mr. Tropenas would produce a fluid material which would be as readily manipulated in the sand mold, whether green or dry, it would be a great step in that direction, and I would request Mr. Tropenas to give his views as to this.

Mr. Tropenas: I cannot say that we have had a great deal of experience about it. In some cases we have been asked to make castings which are not exactly steel nor iron. We could not expect a great deal of elongation from such castings. What we wanted was rather a high tensile strength. In this case I cannot give the capability of it, because we have not gone far in that direction. It is possible, if you take away all the silicon and manganese and part of the carbon, you can reach many grades of metal which cannot be called steel nor iron. I repeat that I have not had enough experience in that direction. I have principally made real steel castings.

Dr. Moldenke: I think the president wants to get something better than air refined iron, but it will be found difficult to strike the right carbon.

Mr. Tropenas: Yes, that would be the practical difficulty. It could be overcome, but it is hard to do so. What makes our process regular is that in many cases we blow the operation out to the end, then add a certain definite quantity of carbon in, and we know exactly what we are going to produce.

Mr. Bailey: What is the largest blow you have found practicable?

Mr. Tropena: Well, we can blow up to 10 tons if we like. But our system has been applied so far to small converters only, one and two tons capacity.

Mr. Bailey: Why do you prefer the small converter?

Mr. Tropenas: Because small and moderate charges are better suited to foundry practice, they are handier and more elastic. We can work a 10-ton charge as economically as a one-ton charge if occasion requires such a large amount.

Mr. West: In regard to the quality of this metal. We know that as a rule in making steel castings, there has been a great deal of labor and experiment to bring them up to their present state of perfection. In peeling a steel casting, removing sand, etc., in ordinary iron practice we do that very readily. How would this metal of yours compare with the present steel work and iron also?

Mr. Tropenas: A good deal depends on the quality of the steel and the nature of the sand used. Originally we used the sand as it came from the quarry, without mixing it. We find the proper sand in all countries. It is silica sand containing 80 to 90 per cent of silica, 4 per cent to 6 per cent of alumina, some oxide of iron, some lime and a few other elements. While this sand is a silica sand and carries a certain proportion of alumina, it has a body to it, and when we get such a sand the casting is pretty smooth on the exterior surface. But we find difficulty in removing the sand from the core. When the contraction of the metal recedes some from the sand then the surface is pretty smooth. We make special mixtures of sand for cores. We generally use a sand blast for cleaning.

Mr. West: Then you have the same difficulty as arrived at with ordinary steel castings In regard to the shrinkage and contraction of your castings, how is it in relation to the present steel castings? Have you less or greater shrinkage?

Mr. Tropenas: About the same. The shrinkage is greater in small castings when the steel is cast hot. When we cast heavy castings we do not cast so hot.

Mr. West: There are two factors to consider—first, the question of shrinkage. I mean the action taking place in the metal when cooling down. Then we have contraction going on after that, which decreases the size of the casting a little. In making all steel castings, a great deal of trouble is found in overcoming both these. They have to put sinking heads on to take charge of shrinkage, and allow in the molds spaces to allow the casting to come in.

Mr. Tropenas: Exactly the same conditions apply.

Mr. Bailey. In making the soft steel castings you, of course, eliminate the carbon, manganese and silicon. Here

is a mixture of iron you use. The figures you give us do not allow anything for burning of the iron in the cupola.

Mr. Tropenas: You have about 6 to 9 per cent of foreign material. When you eliminate all these elements you have besides a loss of iron, and the total loss, foreign elements and iron included, is about 14 to 17 per cent.

Mr. Bailey: It all costs money, whichever way you look at it.

Mr. Tropenas: We say exactly what we find. We put down 17 per cent of loss. This is the maximum. I do not wish to give data too nicely. I put it in the extreme. Very often we have less than 14 per cent altogether.

Mr. West: I should like some idea as to the practical operation of the work, as to utilizing it in the foundry ordinarily. Could our cupolas for melting iron be used for your process and all that would be necessary in addition, be a converter?

Mr. Tropenas: Yes. Generally speaking, however, we prefer to place the cupola on a stage and run the metal direct into the converter by gravity. If we place the cupola on the ground, then we have to run the melted pig into the ladle, take it up by means of a crane and pour into the converter.

Dr. Moldenke: How do you make your additions?

Mr. Tropenas: We melt in crucibles or a small cupola.

Dr. Moldenke: I want to put a question which you may not like to answer. It may happen that people have 10-ton furnaces for open-hearth work and would like to compare the expense of that work with your process. Can you give figures on that?

Mr. Tropenas: It is hard to do that, not having had any experience in this country. In the course of a week or two I may know something more. Next year I hope to have a few works in operation and can then give you figures. I do not like to give figures when I am not certain.

Mr. Bailey: What advantage do you claim for your process over the old Clapp, Griffiths and Robert processes?

Mr. Tropenas: I do not know very much about them, but I think the latter is the best. The other in some cases gives very good and hot steel, but you never know when it is going to be good or bad. The tuyeres placed 3 inches below the surface of the metal is not new. It is more or less the Bessemer process. In the Bessemer you blow from the bottom, but you mix slag, metal and air, and if you blow from the side a certain distance below the surface of the bath it is practically the same, slag metal and air are mixed together. When you have to make a casting you must have a hot blow; if the metal is cold, it is impossible to pour properly and the castings are not sound. We claim that with our system of tuyeres we can bring the temperature to a high degree. We have a plant at Derby, Conn., which we started last week, where we are now making some projectiles for your government. I must say we have to make a special steel to stand a very strong test. We have only so far made two blows. The result shows that it will be satisfactory and that we can meet the requirements of the United States Government.

Mr. Guy R. Johnson: I should like to know why you use a cupola to start this process? Whether it would not facilitate the work to use an air furnace and get the metal down to a much higher degree of purity before pouring? Some people melt large quantities in an air furnace and the product is much purer.

Mr. Tropenas: You mean we could take the carbon off. I do not see the necessity for it, because in our converter we can remove all those impurities, and besides that, while removing them we are raising the temperature, and we want it. If we should start the blow with metal having, say one-half of the impurities, we should not perhaps get the proper temperature at the end. We claim that with our process and with a given analysis of pig iron we reach the temperature wanted at the end. If we had nothing we could not do it. If we remove the carbon, how are we going to have our inside gas?

A delegate: I understood you to say that by your process you can cast from green sand molds. How does the surface of such castings compare with the surface of castings cast in dry molds?

Mr. Tropenas: There is no great difference between the green sand casting and the dry sand one. There is a slight difference in favor of the dry sand mold. It does not depend much on the kind of mold, but more on the analysis of the sand. We make a great many green sand castings for mining and quarry car wheels. I expect that before long we shall make a special steel with high tensile strength and a good deal of elongation and ductility along with it. This will reduce the weight of a casting materially.

INDUSTRIAL SUMMARY.

New Buyers in the Market, and Some of Their Wants:—

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

The Birmingham Iron Bed & Spring Co., Birmingham, Ala., asks prices on mattress wire, iron tubing, brass tubing, angle iron and steel.

John F. Riley, Charleston, S. C., is in the market for equipment for iron foundry and brass foundry.

Southern Engine & Boiler Works, Jackson, Tenn., are in the market for a 96-inch boring and turning mill; 24-inch swing engine lathe, 10 feet between centers; 10-inch slotting machine, with circular, cross and longitudinal feed, and boiler-plate rolls 10 feet between housings.

At Gaffney, S. C., T. H. Littlejohn, J. D. Templeton and B. T. Porter have formed a partnership as the Gaffney Machine Shop, and will establish foundry and machine shop.

Norman W. Girdwood, Asheville, N. C., inquires for a second-hand 10 to 15-kilowatt generator and several small motors from ½ to 4 or 5 h. p.

Frank H. Pavey, of Connersville, Ind., is in the market for engine, boiler, pumps, machine tools, electrical equipment and shop supplies, and desires to receive catalogues.

For the Naval Station, Puget Sound, Wash., bids are asked until Oct. 18 for furnishing machinery and tools Edwin Stewart, Paymaster-Gen., Bureau of Supplies, Washington, D. C., receives them.

American Furnace Co., Chicago, capital stock of $30,000, has been incorporated with S. B. Eaton, David Jameison and Oral D. Orvis.

The A. H. Nilson Co., of Bridgeport, Conn., has been incorporated to carry on machinery manufacture; capital, $5,000.

The Eureka Steel Mfg. Co. has been organized at Kankakee, Ill., and will occupy the Ideal folding bed plant at Bradley. A new process of converting mild steel into tool steel is to be worked, it is said. The capital is $50,000. President, O. G. Bartlett; secretary and treasurer, W. C. Schneider; manager, E. Hardmeyer.

New Construction:—

The Carnegie Steel Co. was awarded the contract by the Alabama Steel & Shipbuilding Co., for constructing the furnace building, and shipments of the structural steel frame and shapes have already been made.

M. E. Wyckliffe is erecting a brick building, two stories, 25x30 feet, at Greenville, S C., to be equipped with machinery for bicycle and general repairing and for locksmithing.

Cary E. Robinson, formerly of the Consolidated Steel & Wire Co., one of the promoters of the Joliet Wire Co., says that the organization of the latter will soon be completed and work begun on its plant. Wire fencing will be the chief product, manufactured under the Robinson patents.

The Illinois Iron & Bolt Co., Carpentersville, Ill., is taking figures on the erection of a new blacksmith shop, of brick, with steel truss roof and tile roofing, 75 by 175 feet in size.

The town of Somerville, Somerset County, N. J., has given the Berlin Iron Bridge Co., East Berlin, Conn., the contract for its new iron bridge. The span is about 60 feet and the bridge has a clear roadway of 14 feet. The trusses will be of substantial latticed type. The floor will have steel beams and joists.

The Western Clock Mfg. Co., Joliet, Ill., has prepared plans for a brick and stone machine shop, 340 by 68 feet in size.

The Sigourney Tool Co., Hartford, Conn.,, will erect a brick factory, 42x80 feet, two stories.

At Mingo Junction, O., ground was broken last week for a new mill adjoining the Bessemer plant of the old Junction works. It will be 270 feet long.

It is reported that the Gisholt Machine Co.'s works will remain in Madison, Wis., and that a new and larger plant will be built.

Alva R. Kerr & Co. have been awarded the contract for erecting Wetherill & Co.'s foundry building at Chester, Pa.

The Pittsburg Sheet Mfg. Co. has purchased 10 acres of land at Shousetown, near Pittsburg, the site lying between the Pittsburg & Lake Erie Railroad and the Ohio River. A

The economy or capacity of boilers depends on two things —the temperature of the water supplied to them, and the absence of scale or incrustations from their heating surfaces. With the Cochrane Heater and a supply of exhaust steam the feed water passing to the pumps will have a temperature of over 200°—say from 208° to 210°—and moreover, these high temperatures will be given so long as the supply of steam is passed into the Heater, even though scale forms three inches thick on the sides of and on the trays within the Heater. All scale forming matter which remains or becomes insoluble at the temperature of exhaust steam can be prevented from locating on and adhering to the interior surfaces of boilers if the opportunity is accorded them to settle and deposit on other surfaces—precipitation and settlement occur in Cochrane Heaters, and these appliances are so made that it is an exceedingly easy matter to clean them. Think of thirty minutes for the operation of cleaning a "Cochrane" as against hours and days for the removal of the same quantity and quality of scale from your boilers, or from a closed heater! The Cochrane Heaters also save all of the exhaust condensed in heating the water, and this addition to the supply is nothing more or less than distilled water—perfectly pure. Practically no such thing as repairs to Cochrane Heaters, and no leakage troubles. Well made, practical Heaters. The Harrison Safety Boiler Works, of Philadelphia, Pa., will be pleased to furnish illustrated catalogues on application, or to submit detailed specifications and estimates on receipt of particulars of requirements.

mill for the manufacture of galvanized sheet iron will be erected, the main building to be 100x250 feet.

The Fred W. Wolf Co., Chicago, has made plans and is receiving estimates for a plant at Pullman, Ill., for the Titan Steel Co. It will comprise a machine shop, L-shaped, 40x200 feet and 80x60 ft., foundry, 80x200 ft., offices, 40x40 ft., with a 100-ft. high corner tower. Buildings are being cleared away on the track of land at 115th st. and the Illinois Central tracks, for this plant. This is the concern with which the Mannesmann interest is to go into the manufacture of projectiles for the government.

New radiator works for the Titusville Iron Co. are under construction at Titusville. It is expected that they will be occupied in January.

J. R. Cook & Son will begin work within a week on a machine shop at Americus, Ga. It will be finished in December and a foundry will be erected later.

Additions, Enlargements, Removals, Etc.:—

The Kidd Bros. & Burgher Polished Steel Wire Co., of McKees Rocks, Pittsburg, has completed a large addition.

The Pittsburg Wire Co., of Pittsburg, recently bought three acres of land on the Monongahela River adjoining its plant at Braddock. It will be used for extensive additions.

The Tamaqua Mfg. Co., Reading, Pa., has begun work on an addition of 42x88 feet to its plant.

The Carborundum Co., of Niagara Falls, N. Y., will enlarge its plant in Niagara Falls, Ont. The original factory there is a frame building, 30x60 feet at the foundation, and to this will be built an extension 40x75 feet.

Chas. J. Swift and associates propose to remove the East Boston plant of the Ostrander Arms Mfg. Co. to Atlanta, Ga., and will establish a gun factory employing 250 men.

R. H. Edwards will remove his foundry and machine shop from Wellsboro, Pa., to Lawrenceville, Pa.

Several important additions and changes are under way at the Norton Emery Wheel Co.'s plant, at Worcester, Mass. One is the construction of an 18-foot kiln, similar to those at present in use. This will largely increase the capacity of the concern. The general manufacturing capacity is being largely increased, also, by the addition of a building 50 feet square, at the rear of the establishment. The stock and supply rooms and the office are being enlarged at the same time, by the erection of an addition on the front of the present office. This is to be three stories high, with a basement, and the storing capacity will be enlarged by it, and more capacious offices will be arranged. The company's increasing business has made these additions necessary.

The Lozier Mfg. Co. is to remove from Thompsonville, Conn., to Westfield, Conn., and a new blacksmith shop erected, 100 x 50 feet.

The Cramp Ship & Engine Building Co. is preparing to erect an immense shop on the east side of York st., between Beach and Richmond sts. The structure will be 100 feet by 120 feet.

Besides the 320 x 105-ft. machine and erecting shop of Fraser & Chalmers, Chicago, which is now under way as already noted in these columns, a tool and stock room 170 x 50 is to be added, and an office building, with a two story vault 66 x 22. The improvements altogether will cost $95,000. The power in the machine and erecting shop will be electrical.

The plant of the Manitowoc (Wis.) Steam Boiler Co. is being enlarged for the second time this year.

The addition to the Morton tin plate works, at Cambridge, O., 200x145 feet, will be completed early in December. The force will then be considerably enlarged.

The Superior Drill Co., Springfield, O., is to have an addition 147x41 feet and four stories. An additional 75 feet will be built on the foundry and a new cupola added.

At La Salle, Ill., an additional machine shop, costing $2,000, will be built at once by the Western Clock Mfg. Co.

The plant of the Corliss Safe Works at Auburn, a suburb of Providence, R.I., which covers several acres, is to be abandoned. It is the intention to remove the machinery to Hamilton, O.

Fires and Accidents:—

Fire in the foundry of the Pennsylvania Agricultural Works at York, Pa., burned out a space 40x60 feet and destroyed considerable work.

The Q & C

Shop Saws

Cut Everything. - - - -

No. 1. Capacity, 4 inches.
No. 2. " 5 "
No. 4. " 8 "
No. 8. " 3x12 "

POWER SAWING MACHINES

For all purposes.

THE Q AND C

Chicago. New York.

Send for Catalogue.

MOUNT SAVAGE FIRE BRICK.

UNION MINING CO,

Proprietors of the CELEBRATED Mount Savage Fire Brick

GOVERNMENT ‡ STANDARD.

Established 1841. Capacity, 60,000 Per Day; 18,000,000 Per Year.

The First Manufactory of its Kind in the U. S.

Home Office and Works:—MOUNT SAVAGE, Alleganv County, Md.

Branch Offices:—No. 1 Broadway, New York, N. Y.; No. 222 So. Third St., Philadelphia, Pa.; Ferguson Block, Pittsburgh Pa., Stowe, Fuller & Co., 195 Merwin St., Cleveland, Ohio.

OTIS STEEL

"OTIS" FIRE-BOX PLATES A SPECIALTY.

Flange Plates, Ship Plates, Tank Plates, Steel Car Axles and Forgings of all kinds.

Steel Castings from 100 to 75,000 lbs.

Head Office and Works, CLEVELAND, OHIO.

Agencies: NEW YORK, 97 Cedar St. CHICAGO, Old Colony Bldg.
ST. LOUIS, 516 N. Third St. WASHINGTON, Kellogg Bldg.
MONTREAL, J. G. Sibbald, 3 Windsor Hotel.
SAN FRANCISCO, John Woodlock, 26 Beale St.

Conestoga Building, EDWARD E. ERIKSON, PITTSBURG, PA.

Regenerative Gas Furnaces and Water Seal Gas Producers.

Producer Gas under Tubular Boilers, saving 20 per cent in fuel. NO SMOKE.

The A B C of Iron, Now $1.

Lightning and fire destroyed the machine shop of C. F. Groenke, at Merrill, Wis. Loss, $6,000; insurance, $4,000.

Fire at Buffalo, Sept. 25, did $12,000 damage to the Bryant Iron Works, the loss being largely in patterns, and $4,000 damage to the Adirondack Bicycle Co.

General Industrial Notes:—

The Tennessee Coal, Iron & Railroad Co. will improve its Ensley furnaces by the addition of two blowing engines.

The Transue & Williams Co., Alliance, O., drop forgings, has been operating to full capacity double turn since the beginning of the year. The past season has been one of the most successful in the company's history.

The Mahoning Foundry & Machine Co., Youngstown, O., has the contract for furnishing castings for the cold blast and gas mains at the two new blast furnaces of the Lorain Steel Co., Lorain, O.

The Vitrified Wheel Co., of Westfield, Mass., manufacturer of vitrified emery and corundum wheels, has repaired its plant, damaged by fire some time ago, and is now better equipped than before for promptly filling orders.

Penman & McCoy's tank and boiler-making plant, at East Chicago, Ind., was sold Sept. 20, by Receiver Lewis to Henry Schrage and the Standard Steel & Iron Co., for $2,090. Work will be resumed at once.

Struthers, Wells & Co., Warren, Pa., have begun the manufacture of gas engines, after the patents of Chas. Jacobson, formerly of Erie, Pa.

Some experiments are being conducted by the Brier Hill Iron & Coal Co., Youngstown, O., with a view to the manufacture of cement from blast furnace slag.

A press dispatch says that the Ætna Foundry & Machine Co., of Warren, O., is looking for a new location with better shipping facilities.

At a meeting of the stockholders of the American Screw Co., at Providence, R. I., Sept. 29, the directors were authorized to dispose of the company's plant at Leeds, England, and to take such action in regard to the Canadian plant as they deemed expedient.

Among recent shipments of steel rails by the Carnegie Steel Co. were consignments to England, Japan and South Africa. Those for England were for use on the Great Northern Railway, and this contract was taken against strong competition by British manufacturers. The rails for South Africa will be laid on a road now being constructed from Cape Town northward by English capital. These rails average only 60 lbs. to the yard. The Japanese order was for 10,000 tons, for use on the Tokyo & Chou Railroad.

The Alabama Bridge & Boiler Works, Birmingham, Ala., has assigned. Capital is $25,000; liabilities not given.

Juan A. Creel, of Chihuahua, Mex., has been in Pittsburg recently contracting for work upon the new open-hearth steel plant his company is to build. A contract for generators will be made with the Westinghouse Electric & Mfg. Co. The structural work will also be let in Pittsburg.

Recent orders for cars are reported as follows by the *Railroad Gazette*: Cincinnati, Portsmouth & Virginia, 25 flat cars, to Ohio Falls Co.; Fitchburg, 12 new passenger cars, 200 flat cars, company's shops; Hocking Valley, 250 coal cars, to Michigan-Peninsular Car Co.; Delaware & Hudson, 1,500 freight cars under consideration; Baltimore & Ohio, 1,000 box cars and considerable number of steel cars under consideration; Inter-Colonial Ry, 400 freight cars to Canadian builders; Chesapeake & Ohio, 100 coke cars, company's shops; Pennsylvania Co., 2,000 cars of 80,000 lbs. capacity, divided as follows: Jackson & Woodin, 500; Murray, Dougal & Co. (Milton Car Works), 200; Michigan-Peninsular Car Co., 300; Terre Haute Car & Mfg. Co., 400; Union Car Works, 300; Middletown Car Works, 100; Lebanon Car & Mfg. Co., 100, and Erie Car Works, 100.

The Corry Radiator works at Corry, Pa., have assigned. Execution judgments amount to $21,544.

The Louisville (Ky.) Foundry & Machine Co., formerly operated by J. J. Sweeney, has been taken up by Mr. John O. Dolfinger, who recently purchased, reconstructed and equipped with tools the old buildings. This was brough about by the Commercial Club. The works will turn out electric elevators, belted and hand-power elevators, shaftings, pulleys, hangers and gearing.

At Belleville, Ill., last week the Missouri Wire & Nail Co. commenced an attachment suit in the Circuit Court against the United States Wire & Nail Co. for $1,126.38.

The real estate of the Akron Iron & Steel Co., Akron, O., consisting of five acres, has been purchased by the Erie Rail-

U. BAIRD MACHINERY CO.,

123-125 Water St., **PITTSBURG, PA.,** 124-126 First Ave.

Machine Tools and Supplies. Send for list of Second-hand Tools.

BRASS

Founders and Finishers.

PLATING

CHAS. L. BASTIAN MFG. CO.,

Franklin and Illinois Sts.

Chicago.

McDOWELL

SEMI-STEEL

PROCESS.

(Cupola metal.) Government tests 36,000 to 49,000 tens. strength.

HANSON McDOWELL,

1522 Monadnock, Chicago.

Advertise in The Iron Trade Review. It will pay you.

A firm needing a certain line of goods naturally turns first to those it has seen oftenest advertised, and with whose name it thus has become familiar. "Keep ing everlastingly at it brings success."

Small Seamless Brass

TUBING

1-32 to 1-2 inch in diameter—any gauge.

SEND FOR QUOTATIONS.

WM. S. SPOFFORD & SON,

Providence, R. I., U. S. A.

PUNCHES AND SHEARS

OF LL KINDS

MANUFACTURED BY

The Long & Allstatter Co.,

HAMILTON, OHIO.

Send for catalogue.

SHENANGO VALLEY STEEL CO., New Castle, Pa.,

MANUFACTURERS OF

Bessemer Pig Iron, Steel Billets, Blooms, Black Plate, Tin Plate, Tin Plate Bars, Wire Rods. Market Wire and Wire Nails.

road for $20,000. The railroad company will enlarge its switch yards.

The Rhode Island Perkins Horse Shoe Works, Providence, R. I., have just dclared a quarterly dividend of 1 per cent on the preferred stock.

The Ludington (Mich.) Boiler Works are credited with the largest purchase of aluminum sheet metal that has ever been bought in Western Michigan. The shipment consisted of several tons, averaging one-eighth of an inch thick, and was used for lining a salt evaporator.

A receiver was appointed last week for the Toledo (O.) Drop Forge Co. Liabilities are $30,000. A chattel mortgage was given a local bank for $14,000, an amount quite equal to the assets.

The Middlesborough (Ky.) Foundry & Machine Co.'s "Holliday Stove Works" have been exempted from taxation for five years by the Middlesborough council.

The plant of the United States Wire & Nail Co., Cleveland, was placed in the hands of a receiver last week. Attachments against the property amount to $15,000.

The Northwestern Boiler Works of M. A Ryan, at Duluth, are running at full capacity. Orders include a large marine boiler for the American Steel Barge Co.

The Riter-Conley Co., Pittsburg, the well known construction company, has changed its name to the Riter-Conley Mfg. Co.

Citizens of Zanesville, O., have had meetings recently looking to securing capital to start up the Ohio Iron Co.'s rolling mill. The furnace has been in operation for some time.

The Wharton Furnace, at Port Oram, N. J., has been blown out for re-lining. The blast on the old lining began on Dec. 5, 1896, and continued until Sept. 20, 1898, with an interruption caused by a chill in March, 1897. The average output was 4,000 tons a month, the maximum being 4,400 tons.

The new machinery plant of R. K. LeBlonde & Co., at Linwood, Cincinnati, O., is being fitted up with a Lane & Bodley Corliss engine, McIlvaine & Spiegel boiler and Reading cranes and hoists.

The Mahoning Valley Iron Co.'s Hannah Furnace, which was out of blast two months for repairs, was blown in at Youngstown, O., Sept. 28.

The new slabbing mill of the Illinois Steel Co. is about completed and the handling equipment is being installed.

The plant of the Fred J. Meyers Co., architectural iron work at Hamilton, O., is to be sold and the company's affairs wound up by the receiver.

A move is said to be on foot by Louisville, Ky., capitalists, to open the Ohio Falls Iron Works at New Albany, Ind. The plant closed down four years ago. It is owned principally by the DePauw and McCulloch estates.

Employes of the Oil City Tube Co., Oil City, Pa., received an increase in wages Oct. 3. The increase was made voluntarily. About 700 men are affected.

The Illinois Steel Co. has leased the 110 coke ovens of the Overholt Co., at West Overton, Pa. This gives the company 1,330 ovens. It is reported that 600 additional ovens will soon be built.

The Dover Fire Brick Co., Cleveland, has its works at Canal Dover, and Strasburg, O., running to full capacity, and there has been a good run of orders for both its Dover and Buckeye brands of brick. A shipment was made to the new open-hearth steel works at Chihuahua, Mexico, last week, consisting of five cars of Dover brick.

W. L. Cleve, John Mullet, and J. E. Warner, of Newcomerstown, O., will establish a foundry plant at Alliance, O. They have secured a building and will remodel it for the manufacture of pipe connections, light and heavy castings, etc.

The Chicago Mining Machine Co. will operate the foundry

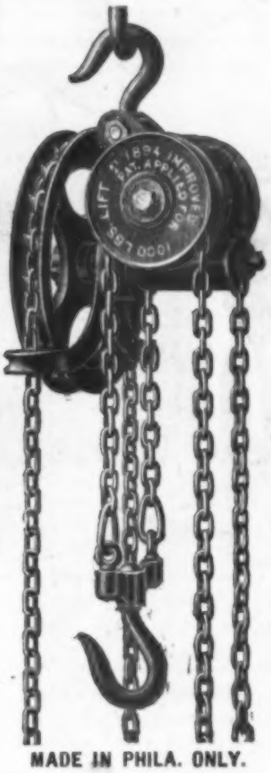
EDWIN HARRINGTON, SON & CO., Inc.,

DESIGNERS AND MANUFACTURERS OF

ENGINE LATHES, DRILLS, MILLING MACHINES, Etc.

1526 PENNA. AVE., PHILADELPHIA, PA.

THE IMPROVED HARRINGTON HOIST.

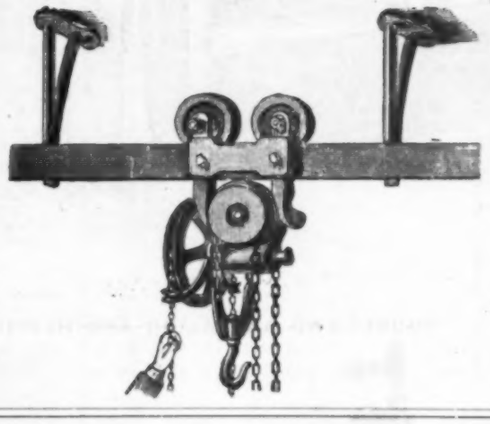


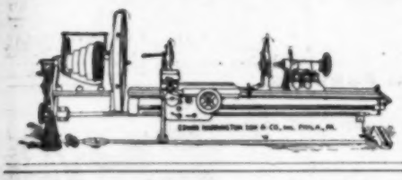
COMPLETE SYSTEM TRAVELING CRANES, OVERHEAD TRACK, Geared and

PLAIN TRAVELERS,

TURN TABLES and SWITCHES.

OUR NEW ELECTRIC HOIST WORKS LIKE A CHARM.





MADE IN PHILA. ONLY.

and machine shop at Harvey, Ill., built by John M. Sweeney and his associates in 1892. Mr. Sweeney has been experimenting with a machine for recovering gold from placer gravels, and the formation of the above named company is the result. The machine consists of a steam shovel combined with a washing and concentrating apparatus. It is designed for the recovery of gold mechanically mixed with gravel and requiring no crushing.

At the Steelton works of the Pennsylvania Steel Co., several of the blast furnaces are undergoing repairs. Three of the four are working; the fourth has been out of blast for several weeks.

W. P. Callahan & Co., of Dayton, O., manufacturers of gas and gasoline engines and hydraulic oil machinery, have been running the equivalent of 13 working days a week for the past three months and have orders that will keep them busy for several months.

Work has been started on the foundations and stoves of the two new blast furnaces of the Ohio Steel Co., Youngstown, O., and good progress is being made. The dimensions determined on make these the largest blast furnaces in the world. The height will be 105 feet and the bosh diameter 23 feet. The stoves, whose base will be on a lower level than the stacks, will be 120 feet high. The construction of the engines is being pushed by Wm. Tod & Co. There will be three, of the vertical, cross-compound, steeple type, with steam cylinders 54 inches and 102 inches in diameter, blowing cylinder of 108 inches diameter, all 60 inches stroke, and each engine will have a capacity of 60,000 cubic feet of air per minute. For the 7,000 h. p. of Stirling boilers, which have been ordered, there will be a central stack 225 feet high and 18 feet in diameter.

LOW RATES TO OMAHA.

Every Day via Pennsylvania Lines for Trans-Mississippi Exposition.

Excursion tickets to Omaha are on sale daily at principal ticket offices of the Pennsylvania Lines and may be obtained up to October 15, inclusive. The return limit includes November 15. For special information about the low fare and quick through time over this route, apply to nearest ticket agent of the Pennsylvania Lines, or address C. L. Kimball, Asst. Gen. Pass. Agent, 149 Superior st, Cleveland, O.

Pennsylvania Lines Excursions to Pittsburg for Knights Templar Conclave.

Excursion tickets to Pittsburg account Knights Templar Triennial Conclave will be sold October 8, 9, 10, 11, 12 and 13, via Pennsylvania Lines. For special information inquire of nearest Pennsylvania Line Ticket Agent, or address, C. L. Kimball, Ass't General Passenger Agent, Cleveland, O.

Good Chance to Visit the East at Low Fare.

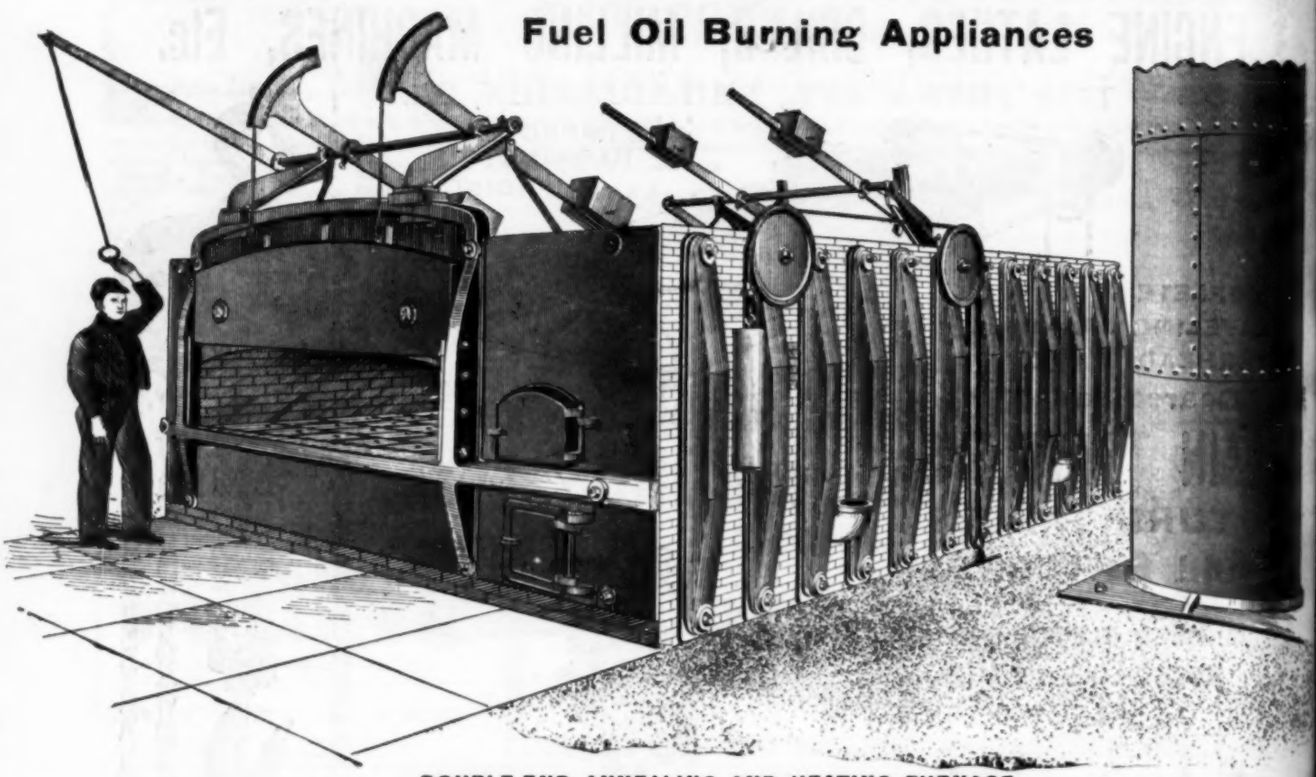
Persons going to Pittsburg over Pennsylvania Lines on cheap tickets to be sold via that route October 8 to 13, inclusive, account Knights Templar Conclave, will have the privilege of buying low rate excursion tickets from Pittsburg to points in Ohio and Pennsylvania, and to Baltimore and Washington, over the Pennsylvania Route, by depositing excursion tickets with Joint Agent after reaching Pittsburg. Full and particular information furnished in reply to inquiries addressed to nearest Pennsylvania Line Ticket Agent, or to C. L. Kimball, Ass't General Passenger Agent, Cleveland, O.

Low Rates to Pittsburg for Knights Templar Conclave.

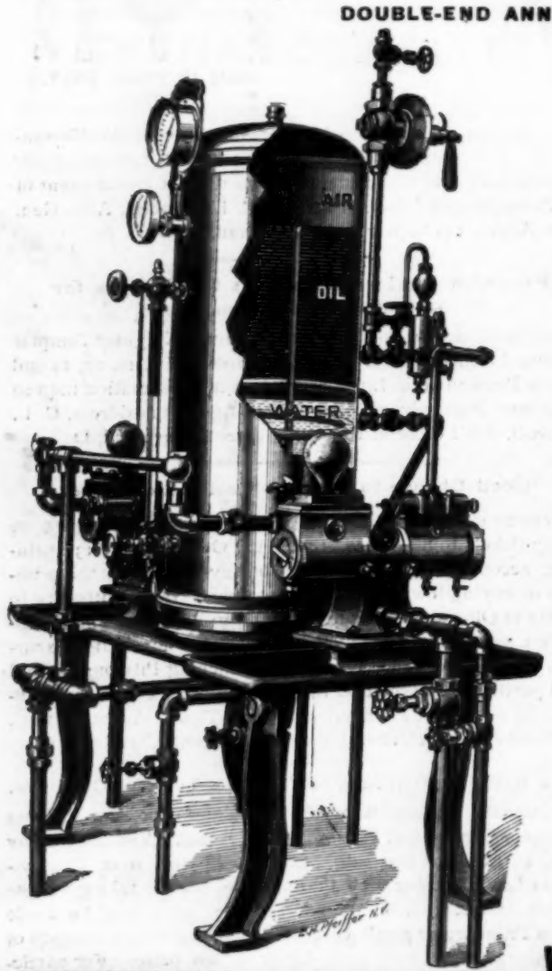
Elaborate arrangements are completed for the Knights Templar Conclave at Pittsburg in October. You may enjoy it all by going on low rate tickets to be sold over Pennsylvania Lines October 8 to 13, inclusive. After taking in the sights and festivities, interesting side trips may be made from Pittsburg at small cost by depositing return coupon of Pittsburg tickets with Joint Agent at that place. For particulars apply to nearest Pennsylvania Line Ticket Agent, or address C. L. Kimball, Ass't General Passenger Agent, Cleveland, O.

IMPROVED OIL FURNACES

Fuel Oil Burning Appliances



DOUBLE-END ANNEALING AND HEATING FURNACE



ROCKWELL'S IMPROVED DUPLEX SYSTEM FOR BURNING FUEL OIL.

Heats, Cleans and Delivers the Oil to the Fires Under a High Uniform Pressure.

Write for Catalogue and further information.

ROCKWELL'S FUEL OIL BURNER.

W. S. Rockwell & Co., Furnace Engineers,

26 Cortlandt St., NEW YORK.